

Department of Physics									
1.1.1 Curricula developed and implemented have relevance to the local/ national / regional and global developmental needs which are reflected in Programme Outcomes (PSOs) and Course Outcomes (COs) of various programmes offered by the Institution									
S. No.	Course Code	Name of the Course	L	N	R	G	POs, PSOs, COs Addressed		
							POs	PSOs	COs
2023-2024									
1	PU231CC1	Core Course I: Properties of Matter and Acoustics	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		PO 1 - To obtain comprehensive knowledge and skills to pursue higher studies in the relevant field of science. PO 2 - To create innovative ideas to enhance entrepreneurial skills for economic independence.	PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc. PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics. PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact, apply the critical reasoning and computing skills to analyze and solve problems in Physics. PSO 4 - To analyze the observed experimental data and relate the results with theoretical expectations. Communicate appropriately and effectively, in a scientific context using present technology.	CO 1 - To relate elastic behavior in terms of three moduli of elasticity and working of torsion pendulum. CO 2 - To appreciate concept of bending of beams and analyze the expression, quantify and understand nature of materials. CO 3 - To explain the surface tension and viscosity of fluid and support the interesting phenomena associated with liquid surface, soap films provide an analogue solution to many engineering problems. CO 4 - To analyze simple harmonic motions mathematically and apply them.
2	PU231CP1	Core Lab Course I: General Physics Lab I	<input checked="" type="checkbox"/>				PO 1 - To obtain comprehensive knowledge and skills to pursue higher studies in the relevant field of science. PO 2 - To create innovative ideas to enhance entrepreneurial skills for economic independence.	PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc. PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics. PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact, apply the critical reasoning and computing skills to analyze and solve problems in Physics. PSO 4 - To analyze the observed experimental data and relate the results with theoretical expectations. Communicate appropriately and effectively, in a scientific context using present technology.	CO 1 - To understand the strength of material using Young's modulus. CO 2 - To acquire knowledge of thermal behaviour of the materials. CO 3 - To analyze the physical principle involved in the various instruments. CO 4 - To understand the scientific method and an ability to apply the scientific method in practice.
3	PU231EC1	Elective Course I: Allied Physics for Mathematics – I	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		PO 1 - To obtain comprehensive knowledge and skills to pursue higher studies in the relevant field of science. PO 2 - To create innovative ideas to enhance entrepreneurial skills for economic independence.	PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc. PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics. PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact, apply the critical reasoning and computing skills to analyze and solve problems in Physics. PSO 4 - To analyze the observed experimental data and relate the results with theoretical expectations. Communicate appropriately and effectively, in a scientific context using present technology.	CO 1 - To acquire knowledge on elementary ideas of waves, properties of matter, electricity, magnetism and electronics. CO 2 - To analyze the concepts of ultrasonics, surface tension and study their applications in the medical field. CO 3 - To interpret the real life solution using concepts of electricity, magnetism, and electronics in digital India. CO 4 - To apply their depth knowledge of Physics in day today life develop their knowledge to carry out the practical by applying these concepts of Physics.
4	PU231EP1	Elective Lab Course I: Allied Physics Practical for Mathematics – I	<input checked="" type="checkbox"/>				PO 1 - To obtain comprehensive knowledge and skills to pursue higher studies in the relevant field of science. PO 2 - To create innovative ideas to enhance entrepreneurial skills for economic independence.	PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc. PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics. PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact, apply the critical reasoning and computing skills to analyze and solve problems in Physics. PSO 4 - To analyze the observed experimental data and relate the results with theoretical expectations. Communicate appropriately and effectively, in a scientific context using present technology.	CO 1 - To understand the basic principles of Physics through experiments. CO 2 - To measure and determine the various physical parameters. CO 3 - To develop an idea about the handling of various instruments. CO 4 - To get an idea about basic scientific knowledge and implications of its broad working principle.
5	PU231NM1	Non-Major Elective NME-I: Physics for Everyday Life	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			PO 1 - To obtain comprehensive knowledge and skills to pursue higher studies in the relevant field of science. PO 2 - To create innovative ideas to enhance entrepreneurial skills for economic independence.	PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc. PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics. PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact, apply the critical reasoning and computing skills to analyze and solve problems in Physics. PSO 4 - To analyze the observed experimental data and relate the results with theoretical expectations. Communicate appropriately and effectively, in a scientific context using present technology.	CO 1 - To understand the knowledge of basic scientific principles and fundamental concepts in motion of bodies. CO 2 - To understand the basic laws of Physics in domestic appliances. CO 3 - To recall the Physics notions applied in various optical instruments. CO 4 - To comprehend the utilization of solar energy in everyday life activities. CO 5 - To know about the various physicists contribution towards science and technology.
6	PU231FC1	Foundation Course: Introductory Physics	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			PO 1 - To obtain comprehensive knowledge and skills to pursue higher studies in the relevant field of science. PO 2 - To create innovative ideas to enhance entrepreneurial skills for economic independence.	PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc. PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics. PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact, apply the critical reasoning and computing skills to analyze and solve problems in Physics. PSO 4 - To analyze the observed experimental data and relate the results with theoretical expectations. Communicate appropriately and effectively, in a scientific context using present technology.	CO 1 - To apply concept of vectors to understand concepts of Physics and solve problems. CO 2 - To interpret different forces present in Nature while learning about phenomena related to these different forces. CO 3 - To describe energy in different process and relate momentum, velocity and energy. CO 4 - To differentiate different types of motions they would encounter in various courses and understand their basis. CO 5 - To relate various properties of matter with their behavior and connect them with different physical parameters involved.
7	PU232CC1	Core Course II: Heat, Thermodynamics and Statistical Physics	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			PO 1 - To obtain comprehensive knowledge and skills to pursue higher studies in the relevant field of science. PO 2 - To create innovative ideas to enhance entrepreneurial skills for economic independence.	PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc. PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics. PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact, apply the critical reasoning and computing skills to analyze and solve problems in Physics. PSO 4 - To analyze the observed experimental data and relate the results with theoretical expectations. Communicate appropriately and effectively, in a scientific context using present technology.	CO 1 - To acquire knowledge on how to distinguish between temperature and heat, and explain practical measurements of high temperature as well as low temperature Physics. CO 2 - To derive the efficiency of Carnot's engine and discuss the implications of the laws of thermodynamics in diesel and petrol engines. CO 3 - To analyze performance of thermodynamic systems viz efficiency by problems and gets an insight into thermodynamic properties like enthalpy, entropy. CO 4 - To study the process of thermal conductivity and apply it to good and bad conductors. CO 5 - To interpret classical statistics concepts such as phase
8	PU232CP1	Core Lab Course II: General Physics Lab II	<input checked="" type="checkbox"/>				PO 1 - To obtain comprehensive knowledge and skills to pursue higher studies in the relevant field of science. PO 2 - To create innovative ideas to enhance entrepreneurial skills for economic independence.	PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc. PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics. PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact, apply the critical reasoning and computing skills to analyze and solve problems in Physics. PSO 4 - To analyze the observed experimental data and relate the results with theoretical expectations. Communicate appropriately and effectively, in a scientific context using present technology.	CO 1 - To understand the strength of materials using physical experiments. CO 2 - To acquire knowledge of thermal behaviour of the materials. CO 3 - To analyze the physical principle involved in the various instruments such as sonometer and Melde's string. CO 4 - To understand the scientific method and an ability to apply the scientific method in practice.

9	PU232EC1	Elective Course II: Allied Physics for Mathematics – II	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To obtain comprehensive knowledge and skills to pursue higher studies in the relevant field of science . PO 2 - To create innovative ideas to enhance entrepreneurial skills for economic independence.	PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc. PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics. PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact. apply the critical reasoning and computing skills to analyze and solve problems in Physics. PSO 4 - To analyze the observed experimental data and relate the results with theoretical expectations. Communicate appropriately and effectively, in a scientific context using present technology.	CO 1 - To explain the concepts of interference, diffraction and rephrase the concept of polarization. CO 2 - To outline the basic foundation of different atom models and relate the importance of theoretical models. CO 3 - To understand the properties of nuclei, nuclear forces, structure of atomic nucleus and nuclear models and interpret nuclear processes like fission and fusion. CO 4 - To describe the basic concepts of relativity like equivalence principle, inertial frames and lorentz transformation. CO 5 - To summarize the working of semiconductor devices like diodes, transistors, chargers and charging stations.
10	PU232EP1	Elective Lab Course I: Allied Physics Practical for Mathematics – II	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To obtain comprehensive knowledge and skills to pursue higher studies in the relevant field of science . PO 2 - To create innovative ideas to enhance entrepreneurial skills for economic independence.	PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc. PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics. PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact. apply the critical reasoning and computing skills to analyze and solve problems in Physics. PSO 4 - To analyze the observed experimental data and relate the results with theoretical expectations. Communicate appropriately and effectively, in a scientific context using present technology.	CO 1 - To understand the nature of monochromatic light and its diffraction and interference phenomenon. CO 2 - To able to design simple logic circuits. CO 3 - To analyze the physical principle involved in the various instruments. CO 4 - To understand the scientific method and an ability to apply the scientific method in practice.
11	PU232NM1	Non-major Elective NME-II: Physics of Music	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To obtain comprehensive knowledge and skills to pursue higher studies in the relevant field of science . PO 2 - To create innovative ideas to enhance entrepreneurial skills for economic independence.	PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc. PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics. PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact. apply the critical reasoning and computing skills to analyze and solve problems in Physics. PSO 4 - To analyze the observed experimental data and relate the results with theoretical expectations. Communicate appropriately and effectively, in a scientific context using present technology.	CO 1 - To understand the principles and basic scientific concepts in sound waves. CO 2 - To understand the various phenomena of simple vibrating systems. CO 3 - To comprehend the various musical notes and its production . CO 4 - To apply the knowledge of recording music in day to day life activities. CO 5 - To know the scientific concepts of music.
12	PU232SE1	Skill Enhancement Course SEC I: Digital Photography	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To obtain comprehensive knowledge and skills to pursue higher studies in the relevant field of science . PO 2 - To create innovative ideas to enhance entrepreneurial skills for economic independence.	PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc. PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics. PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact. apply the critical reasoning and computing skills to analyze and solve problems in Physics. PSO 4 - To analyze the observed experimental data and relate the results with theoretical expectations. Communicate appropriately and effectively, in a scientific context using present technology.	CO 1 - To describe the principle of image formation in photography. CO 2 - To apply the parameters for controlling the images. CO 3 - To identify different types of camera . CO 4 - To explain the image formation in digital photography. CO 5 - To illustrate the digital image – postproduction procedures.
13	PC2031	Major Core III – Heat and Thermodynamics	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To apply the acquired scientific knowledge to face day to day needs. PO 2 - To create innovative ideas through laboratory experiments. PO 3 - To carry out field works and projects in collaboration with other institution. PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.	PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc. PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics. PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact. PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics. PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.	CO 1 - To understand experimental methods to determine the transmission of heat. CO 2 - To analyze the work and heat interactions associated with a prescribed process path and to perform an analysis of a flow system. CO 3 - To understand the basic concepts of thermodynamics like system, properties, equilibrium, pressure, specific volume, temperature and the laws of thermodynamics. CO 4 - To evaluate entropy changes in a wide range of processes and determine the reversibility or irreversibility of a process from such calculations. CO 5 - To analyze maxwell's thermo dynamical relations and their
14	PC2032	Major – Elective - I a) Non Conventional Energy Sources	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To apply the acquired scientific knowledge to face day to day needs. PO 2 - To create innovative ideas through laboratory experiments. PO 3 - To carry out field works and projects in collaboration with other institution. PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable.	PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc. PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics. PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact. PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics. PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.	CO 1 - To apply the solar energy in various sectors. CO 2 - To explain the basic principles of wind energy conversion, various biomass conversion processes and its classification. CO 3 - To discuss the geothermal energy resources and chemical energy resources. (fuel cells). CO 4 - To solve the present and future energy crisis.
15	PC2033	Major – Elective - I b) Fundamentals of Physics - I	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To apply the acquired scientific knowledge to face day to day needs. PO 2 - To create innovative ideas through laboratory experiments. PO 3 - To carry out field works and projects in collaboration with other institution. PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.	PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc. PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics. PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact. PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics. PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.	CO 1 - To understand the fundamentals of dynamics. CO 2 - To determine the behavior of a ray at any optical surface (lenses, Prisms). CO 3 - To outline the extraction of useful energy from earth, ocean, wind and sun. CO 4 - To determine the significance of steady current and alternating current. CO 5 - To apply Kirchoff's laws to simple electrical circuits.
16	PC2034	Major – Elective - I c) Microprocessor Fundamentals	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To apply the acquired scientific knowledge to face day to day needs. PO 2 - To create innovative ideas through laboratory experiments. PO 3 - To carry out field works and projects in collaboration with other institution. PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.	PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc. PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics. PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact. PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics. PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.	CO 1 - To know the basic ideas on microprocessor, memory and I/O devices. CO 2 - To be familiar with the basic concepts of microprocessor architecture and interfacing. CO 3 - To acquire skills in the programming instruction sets of microprocessors. CO 4 - To apply the programming instructions to perform simple programs using microprocessor. CO 5 - To apply kirchoff's laws to simple electrical circuits.
17	AP2031	Allied I – Allied Physics I for Chemistry	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To apply the acquired scientific knowledge to face day to day needs. PO 2 - To create innovative ideas through laboratory experiments. PO 3 - To carry out field works and projects in collaboration with other institution. PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.	PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc. PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics. PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact. PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics. PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.	CO 1 - To understand to know, various modulus involved in the materials, flow of liquids due to viscous forces, transmission of heat due to process of conduction, convection and radiation and various laws involved in heat transformation, various thermodynamic laws. CO 2 - To analyze the concepts and study the concept of entropy, and the phenomenon like interference and diffraction, optical activity of liquids and its uses. CO 3 - To apply their depth knowledge of Physics in day today life.

18	PC20S1	Self Learning Course - Physics for Competitive Examination – I	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p> <p>PO 7 - To equip students with hands on training through various courses to enhance</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p>	<p>CO 1 - To recall the principles of mechanics and conservation laws.</p> <p>CO 2 - To understand the concept of fluid dynamics.</p> <p>CO 3 - To categorize different kinds of oscillations.</p> <p>CO 4 - To examine the various aberrations and geometry involved in optics.</p> <p>CO 5 - To apply the laws of thermodynamics on heat phenomena.</p>
19	PC2041	Major Core IV – Optics and Spectroscopy	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p>	<p>CO 1 - To understand the knowledge of geometric optics is helps in the practical design of many optical systems and instruments including aberrations in lens system.</p> <p>CO 2 - To determine the behavior of a ray and wave at any optical surface.</p> <p>CO 3 - To analyze the intensity variation of light due to polarization, interference and diffraction.</p> <p>CO 4 - To study of phenomena interference, diffraction, and polarization lays the foundation for an understanding of concepts such as holograms, interferometers.</p>
20	PC2042	Major – Elective - II a) Computer Programming in C++	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p>	<p>CO 1 - To understand the different types of operators and expressions in C++ language.</p> <p>CO 2 - To implement different operation an arrays and use function to solve the given problem.</p> <p>CO 3 - To understand member functions and constructors.</p> <p>CO 4 - To analyze pointers, operator overloading and inheritance.</p> <p>CO 5 - To analyze input/output operations.</p>
21	PC2043	Major – Elective - II b) Medical Physics	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p>	<p>CO 1 - To understand the anatomical terms of the body.</p> <p>CO 2 - To explain the physical dynamics of the body.</p> <p>CO 3 - To analyse the heat and pressure system of the body.</p> <p>CO 4 - To discuss the optical and electrical behavior of the human body.</p> <p>CO 5 - To gain knowledge and application ideas regarding diagnostic systems.</p>
22	PC2044	Major – Elective - II c) Optoelectronics	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p>	<p>CO 1 - To explain the various methods of propagation of light waves through various types of fibres.</p> <p>CO 2 - To understand the basic concepts of fiber optics and types of fibers.</p> <p>CO 3 - To explain the structure and performance of LED's and lasers.</p> <p>CO 4 - To classify the optical sources and detectors and to discuss their principle.</p> <p>CO 5 - To discuss the channel impairments such as losses and dispersion.</p>
23	AP2041	Allied II – Allied Physics II for Chemistry	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects in collaboration with other institution.</p> <p>PO 7 - To equip students with hands on training through various courses to enhance entrepreneurship skills.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p>	<p>CO 1 - To acquire knowledge on elementary ideas of electricity and magnetism, electronics, atomic and nuclear Physics .</p> <p>CO 2 - To analyze the concepts and study their applications in the field of electricity and magnetism, electronics and nuclear Physics.</p> <p>CO 3 - To apply their depth knowledge of Physics in day today life.</p> <p>CO 4 - To develop their knowledge and carry out the practical by applying the concepts of a rectifier, amplifiers and oscillator, basic digital electronics principles through logic gates and the laws governing them.</p>
24	PC20P2	Major Practical II - Physics Lab II	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects in collaboration with other institution.</p> <p>PO 7 - To equip students with hands on training through various courses to enhance entrepreneurship skills.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p>	<p>CO 1 - To understand the scientific method and an ability to apply the scientific method in practice.</p> <p>CO 2 - To recall the basic experiments; improve the basic skills and attitude which help them to apply these skills in their field of Physics.</p> <p>CO 3 - To understand the practical knowledge of various bridges (desauty's and owen's bridge) by demonstration of experiments.</p> <p>CO 4 - To verify the thevenin and nortons theorem.</p> <p>CO 5 - To compile a record of an experiment in a clear and logical written form (e.g., lab manual report, Record) augmented with figures and graphs where appropriate.</p> <p>CO 6 - To analyze the physical principle involved in the various</p>
25	AP20P1	Allied Practical – General Physics Lab	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects in collaboration with other institution.</p> <p>PO 7 - To equip students with hands on training through various courses to enhance entrepreneurship skills.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p>	<p>CO 1 - To understand the basic principles of Physics through experiments.</p> <p>CO 2 - To measure and determine the various physical parameters.</p> <p>CO 3 - To develop an idea about the handling of various instruments.</p> <p>CO 4 - To get an idea about basic scientific knowledge and implications of its broad working principle.</p> <p>CO 5 - To analyze, interpret and evaluate data.</p> <p>CO 6 - To build a foundation in scientific career.</p>
26	PC20S2	Self Learning Course: Physics for Competitive Examination – II	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p> <p>PO 7 - To equip students with hands on training through various courses to enhance</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p>	<p>CO 1 - To discuss the principles and generation of electric charges.</p> <p>CO 2 - To classify the different types of magnetic materials.</p> <p>CO 3 - To correlate the mechanisms involved between magnetism and electricity.</p> <p>CO 4 - To discuss the principles behind the phenomena of atomic Physics and nuclear reactions.</p> <p>CO 5 - To apply the laws of thermodynamics on heat phenomena.</p> <p>CO 6 - To differentiate metals, conductors and insulators.</p> <p>CO 7 - To recognize the elements of microprocessors and computers.</p>
27	PC20S1	Major Core V – Classical and Statistical Mechanics	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p>	<p>CO 1 - To understand the basic mechanical concepts related to system of particles.</p> <p>CO 2 - To apply various mechanical principles to find solution for physical problem.</p> <p>CO 3 - To solve the equations of motion using hamiltonian formalism.</p> <p>CO 4 - To explain the fundamental postulates of statistical mechanics and maxwell boltzmann statistics.</p> <p>CO 5 - To understand and develop a scientific knowledge in quantum statistics.</p>

28	PC2052	Major Core VI - Analog Electronics			<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p>	<p>CO 1 - To understand the fundamental principles of semiconductors including p-n junctions and zener diode.</p> <p>CO 2 - To illustrate network theorems like thevenin's theorem, norton's theorem.</p> <p>CO 3 - To analyze the operation of transistor, amplifier, oscillator and multivibrator.</p> <p>CO 4 - To demonstrate practical skills in the simulation, construction and testing of simple electrical and electronic circuits.</p> <p>CO 5 - To understand and develop a scientific knowledge in</p>
29	PC2053	Major Core VII - Solid State Physics			<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p>	<p>CO 1 - To illustrate various types of bonding present in solids with example.</p> <p>CO 2 - To explain the various crystal parameters and structures.</p> <p>CO 3 - To discuss the various theories involved in magnetic materials, (dia, para, ferro, ferri and antiferro magnetism).</p> <p>CO 4 - To describe polarization processes and analyze the information contained in the temperature and frequency dependence of dielectric materials.</p> <p>CO 5 - To analyze the structure and physical properties of semiconductors.</p>
30	PC20PR	Research Project	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects in collaboration with other institution.</p> <p>PO 7 - To equip students with hands on training through various courses to enhance entrepreneurship skills.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p>	<p>CO 1 - To explore new areas of research in Physics.</p> <p>CO 2 - To analyze a research problem and construct tools for data collection.</p> <p>CO 3 - To write research reports and present results in the scientific community.</p> <p>CO 4 - To develop skills to serve in science related industries and agencies.</p>
31	PC2061	Major Core VIII – Relativity and Quantum Mechanics	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p>	<p>CO 1 - To gain knowledge in the concepts of special and theory of relativity.</p> <p>CO 2 - To evolve ideas about dual nature of matter.</p> <p>CO 3 - To recognize basic terms in quantum mechanics and different operator mechanism.</p> <p>CO 4 - To apply of schrödinger's equation to micro system.</p>
32	PC2062	Major Core IX – Digital and Communication Electronics	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p>	<p>CO 1 - To understand the basic operation, and features related to logic gates and interprets their applications.</p> <p>CO 2 - To acquire knowledge on number system, arithmetic building blocks, and memories.</p> <p>CO 3 - To understand the fundamental concepts of logic gates, counters, registers, fiber optics.</p> <p>CO 4 - To develop skill to build and troubleshoot combinational digital circuits.</p> <p>CO 5 - To understand AM, FM and PM modulation and demodulation techniques.</p> <p>CO 6 - To analyze the concepts trained in the computer lab activities and provide an understanding of data acquisition and analysis assess the basic concepts of fiber optics and types of fiber diodes, transistor, op-amps and converters.</p>
33	PC2063	Major Core X - Nuclear Physics			<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p>	<p>CO 1 - To understand the basics of nuclear Physics that treats atomic nuclei as self-bound many-body quantum systems.</p> <p>CO 2 - To acquire knowledge about particle- antiparticle, decay processes and their outcomes.</p> <p>CO 3 - To basic interaction between fundamental particles.</p>
34	PC2064	Major – Elective – III a) Mathematical Physics			<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p>	<p>CO 1 - To illustrate linear dependence and combination of vectors as quantities in Physics.</p> <p>CO 2 - To solve ordinary and partial differential equations related to physical science.</p> <p>CO 3 - To evaluate problems in matrices.</p> <p>CO 4 - To adapt laplace transform technique to obtain the laplace series of periodic functions of Physics.</p> <p>CO 5 - To understand and manipulate random variables using the theory of probability including tools of probability transformation and characteristic functions.</p>
35	PC2065	Major – Elective – III b) NanoPhysics			<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p>	<p>CO 1 - To infer the history of nanotechnology and explain the synthesis of nanomaterials.</p> <p>CO 2 - To interpret quantum well, quantum wires and quantum dots.</p> <p>CO 3 - To explain the carbon nanotubes and its applications.</p> <p>CO 4 - To discuss the applications of nanotechnology in various fields.</p>
36	PC2066	Major – Elective – III c) AstroPhysics	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p>	<p>CO 1 - To perceive the historical evolution of solar system and planets.</p> <p>CO 2 - To describe the principles of Physics in the formation of astronomical objects like planets-satellites -asteroids and comets.</p> <p>CO 3 - To examine the requirements and limitations of instrumentation for modern astrophysical observations (optical telescopes and radio telescopes).</p> <p>CO 4 - To analyze the formation of stars, pulsars, neutron stars and black holes.</p> <p>CO 5 - To interpret the observations of galaxies, star clusters, galactic clusters.</p>

37	PC20P3	Major Practical III - Physics Lab III				<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects in collaboration with other institution.</p> <p>PO 7 - To equip students with hands on training through various courses to enhance entrepreneurship skills.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p>	<p>CO 1 - To demonstrate the experimental techniques and develop competence in handling optical instruments.</p> <p>CO 2 - To analyze the diffraction and dispersion phenomena in optical elements (grating or prism) using spectrometer.</p> <p>CO 3 - To develop practical hands-on experience applying widely used techniques to investigate optical phenomena. (Oblique incidence, i - d curve).</p> <p>CO 4 - To record, analyze, interpret and critically evaluate cauchy's constant and hartmann's interpolation formula experimentally.</p>
38	PC20P4	Major Practical IV - Physics Lab IV	<input checked="" type="checkbox"/>			<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects in collaboration with other institution.</p> <p>PO 7 - To equip students with hands on training through various courses to enhance entrepreneurship skills.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p>	<p>CO 1 - To develop knowledge and skills relating to electricity and electronics through hands-on learning experience.</p> <p>CO 2 - To understand the fundamental concepts and mechanisms used in digital electronics, (logic gates and flip - flops).</p> <p>CO 3 - To design and analyse digital systems / logical circuits. (de morgan's theorems using IC).</p> <p>CO 4 - To analyse and design various combinational and sequential circuits. (flip flop, encoder, decoder, op-amp etc.).</p> <p>CO 5 - To infer the operation of basic logic gates, understand boolean algebra and simplify simple boolean functions by using</p>
39	PC20P5	Major Practical V - Physics Lab V	<input checked="" type="checkbox"/>			<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects in collaboration with other institution.</p> <p>PO 7 - To equip students with hands on training through various courses to enhance entrepreneurship skills.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p>	<p>CO 1 - To understand the principles of object oriented program to construct computer programs and modeling of experimental data for the solution of problems in Physics (period of a pendulum and Young's modulus of a material).</p> <p>CO 2 - To apply object oriented programming techniques to solve computing problems (addition, subtraction, multiplication and division).</p> <p>CO 3 - To develop programs using functions and classes (objects, array of objects, friend functions, passing and returning objects, function declaration with/without using the return statement).</p> <p>CO 4 - To formulate the applications of pointers and virtual functions. Distinguish formatted and unformatted I/O operations.</p> <p>CO 5 - To develop programs using constructor, destructor, operator overloading and inheritance. (generate a series of fibonacci numbers using constructor in the scope of class definition / out of the class definition using the scope resolution</p>
40	PSK206	Skill Enhancement Course (SEC) – Basic Electrical Circuits and Instruments	<input checked="" type="checkbox"/>			<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects in collaboration with other institution.</p> <p>PO 7 - To equip students with hands on training through various courses to enhance entrepreneurship skills.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p>	<p>CO 1 - To recall the basic definitions and units of electrical quantities.</p> <p>CO 2 - To analyze the circuit elements and their connections.</p> <p>CO 3 - To develop their own circuits using electrical wiring.</p> <p>CO 4 - To compare the Physics concepts behind various electrical instruments and appliances (voltmeter,ammeter, incandescent lamp, fluorescent bulb, choke and starter).</p> <p>CO 5 - To demonstrate uses of tester & Multimeter, LDR, Microphone, loudspeaker, etc.,</p> <p>CO 6 - To test for the working of electrical circuits and appliances</p>
41	PP231CC1	Core Course I: Mathematical Physics	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<p>PO 1 - To apply their knowledge, analyze complex problems, think independently, formulate and perform quality research.</p> <p>PO 2 - To carry out internship programmes and research projects to develop scientific and innovative ideas through effective communication.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics.</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations. Demonstrate proficiency in analyzing, applying and solving Scientific problems.</p> <p>PSO 5 - To use the techniques, skills, and modern technology necessary to communicate effectively with professional and ethical responsibility.</p>	<p>CO 1 - To understand use of bracket vector notation and explain the meaning of complete orthonormal set of basis vectors, and transformations and be able to apply them.</p> <p>CO 2 - To be able to understand analytical functions, do complex integration, by applying Cauchy Integral Formula.</p> <p>CO 3 - To be able to compute many real integrals and infinite sums via complex integration.</p> <p>CO 5 - To solve equations using laplace transform and analyze the fourier transformations of different function, grasp how these transformations can speed up analysis and correlate their importance in technology.</p> <p>CO 6 - To find the solutions for physical problems using linear differential equations and to solve boundary value problems using</p>
42	PP231CC2	Core Course II: Classical Mechanics and Relativity	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<p>PO 1 - To apply their knowledge, analyze complex problems, think independently, formulate and perform quality research.</p> <p>PO 2 - To carry out internship programmes and research projects to develop scientific and innovative ideas through effective communication.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics.</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations. Demonstrate proficiency in analyzing, applying and solving Scientific problems.</p> <p>PSO 5 - To use the techniques, skills, and modern technology necessary to communicate effectively with professional and ethical responsibility.</p>	<p>CO 1 - To understand the fundamentals of Classical Mechanics.</p> <p>CO 2 - To apply the principles of lagrangian mechanics to solve the equations of motion of physical systems.</p> <p>CO 3 - To apply the principles of hamiltonian mechanics to solve the equations of motion of physical systems.</p> <p>CO 4 - To analyze the small oscillations in systems and determine their normal modes of oscillations.</p> <p>CO 5 - To understand and apply the principles of relativistic kinematics to the mechanical systems.</p>
43	PP231CC3	Core Course III: Linear and Digital ICs and Applications	<input checked="" type="checkbox"/>			<p>PO 1 - To apply their knowledge, analyze complex problems, think independently, formulate and perform quality research.</p> <p>PO 2 - To carry out internship programmes and research projects to develop scientific and innovative ideas through effective communication.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics.</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations. Demonstrate proficiency in analyzing, applying and solving Scientific problems.</p> <p>PSO 5 - To use the techniques, skills, and modern technology necessary to communicate effectively with professional and ethical responsibility.</p>	<p>CO 1 - To remember the basic concepts for the circuit configuration for the design of linear integrated circuits and develops skill to solve problems.</p> <p>CO 2 - To develop skills to design linear and non-linear applications circuits using op-amp and design the active filters circuits.</p> <p>CO 3 - To apply knowledge about PLL, and develop the skills to design the simple circuits using IC 555 timer and can solve problems related to it.</p> <p>CO 4 - To analyze about various techniques to develop A/D and D/A converters.</p>
44	PP231CP1	Core Lab Course I – Advanced Physics Lab I	<input checked="" type="checkbox"/>			<p>PO 1 - To apply their knowledge, analyze complex problems, think independently, formulate and perform quality research.</p> <p>PO 2 - To carry out internship programmes and research projects to develop scientific and innovative ideas through effective communication.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics.</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations. Demonstrate proficiency in analyzing, applying and solving Scientific problems.</p> <p>PSO 5 - To use the techniques, skills, and modern technology necessary to communicate effectively with professional and ethical responsibility.</p>	<p>CO 1 - To identify and understand the various forms of renewable and non-renewable energy sources.</p> <p>CO 2 - To understand the principle of utilizing the oceanic energy and apply it for practical applications.</p> <p>CO 3 - To discuss the working of a windmill and analyze the advantages of wind energy.</p> <p>CO 4 - To evaluate the aerobic digestion process from anaerobic digestion.</p> <p>CO 5 - To understand the components of solar radiation, their measurement and apply them to utilize solar energy.</p>
45	PP231EC1	Elective Course I: a) Energy Physics	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<p>PO 1 - To apply their knowledge, analyze complex problems, think independently, formulate and perform quality research.</p> <p>PO 2 - To carry out internship programmes and research projects to develop scientific and innovative ideas through effective communication.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics.</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations. Demonstrate proficiency in analyzing, applying and solving Scientific problems.</p> <p>PSO 5 - To use the techniques, skills, and modern technology necessary to communicate effectively with professional and ethical responsibility.</p>	<p>CO 1 - To acquire the basic concepts, nucleation and kinetics of crystal growth.</p> <p>CO 2 - To understand the crystallization principles and growth techniques.</p> <p>CO 3 - To study various methods of crystal growth techniques.</p> <p>CO 4 - To understand the thin film deposition methods.</p> <p>CO 5 - To apply the techniques of thin film formation and thickness measurement.</p>

46	PP231EC2	Elective Course I: b) Crystal Growth and Thin Films			<input checked="" type="checkbox"/>	PO 1 - To apply their knowledge, analyze complex problems, think independently, formulate and perform quality research. PO 2 - To carry out internship programmes and research projects to develop scientific and innovative ideas through effective communication.	PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics. PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations. PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics. PSO 4 - To apply and interpret Physics principles in various physical observations. Demonstrate proficiency in analyzing, applying and solving Scientific problems. PSO 5 - To use the techniques, skills, and modern technology necessary to communicate effectively with professional and ethical responsibility.	CO 1 - To acquire knowledge on optoelectronic materials. CO 2 - To be able to prepare ceramic materials. CO 3 - To be able to understand the processing and applications of polymeric materials. CO 4 - To be aware of the fabrication of composite materials. CO 5 - To be knowledgeable of shape memory alloys, metallic glasses and nanomaterials.
47	PP231EC3	Elective Course I: c) Material Science			<input checked="" type="checkbox"/>	PO 1 - To apply their knowledge, analyze complex problems, think independently, formulate and perform quality research. PO 2 - To carry out internship programmes and research projects to develop scientific and innovative ideas through effective communication.	PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics. PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations. PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics. PSO 4 - To apply and interpret Physics principles in various physical observations. Demonstrate proficiency in analyzing, applying and solving Scientific problems. PSO 5 - To use the techniques, skills, and modern technology necessary to communicate effectively with professional and ethical responsibility.	CO 1 - To understand the concepts involved in arithmetic and logical circuits using IC's. CO 2 - To acquire knowledge about combinational logic circuits and sequential logic circuits. CO 3 - To analyze the applications of counters and registers. CO 4 - To acquire knowledge about the applications of laser. CO 5 - To improve the analytical and observation ability in Physics experiments. CO 6 - To analyze various parameters related to operational amplifiers. CO 7 - To understand the strength of material using young's modulus.
48	PP232CC1	Core Course IV: Statistical Mechanics			<input checked="" type="checkbox"/>	PO 1 - To apply their knowledge, analyze complex problems, think independently, formulate and perform quality research. PO 2 - To carry out internship programmes and research projects to develop scientific and innovative ideas through effective communication.	PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics. PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations. PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics. PSO 4 - To apply and interpret Physics principles in various physical observations. Demonstrate proficiency in analyzing, applying and solving Scientific problems. PSO 5 - To use the techniques, skills, and modern technology necessary to communicate effectively with professional and ethical responsibility.	CO 1 - To examine and elaborate the effect of changes in thermodynamic quantities on the states of matter during phase transition. CO 2 - To interpret the macroscopic properties such as pressure, volume, temperature, specific heat, elastic module etc. using microscopic properties like intermolecular forces, chemical bonding, atomicity and describe the peculiar behaviour of the entropy by mixing two gases. CO 3 - To distinguish canonical and grand canonical ensembles and to interpret the relation between thermodynamical quantities and partition function. CO 4 - To analyze and apply the different statistical concepts to assess the behaviour of ideal fermi gas and ideal bose gas and also
49	PP232CC2	Core Course V: Quantum Mechanics – I			<input checked="" type="checkbox"/>	PO 1 - To apply their knowledge, analyze complex problems, think independently, formulate and perform quality research. PO 2 - To carry out internship programmes and research projects to develop scientific and innovative ideas through effective communication.	PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics. PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations. PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics. PSO 4 - To apply and interpret Physics principles in various physical observations. Demonstrate proficiency in analyzing, applying and solving Scientific problems. PSO 5 - To use the techniques, skills, and modern technology necessary to communicate effectively with professional and ethical responsibility.	CO 1 - To understand the basic postulates of quantum mechanics which serve to formalize the rules of quantum mechanics. CO 2 - To interpret and relate the schrodinger equation to solve one dimensional problems and three dimensional problems. CO 3 - To apply and analyze various representations, space time symmetries and formulations of time evolution. CO 4 - To construct and prioritize the approximation methods for various quantum mechanical problems. CO 5 - To apply and formulate non-commutative algebra for angular and spin angular momentum and assess spectral line splitting.
50	PP232CP1	Core Lab Course II – Advanced Physics Lab II			<input checked="" type="checkbox"/>	PO 1 - To apply their knowledge, analyze complex problems, think independently, formulate and perform quality research. PO 2 - To carry out internship programmes and research projects to develop scientific and innovative ideas through effective communication.	PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics. PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations. PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics. PSO 4 - To apply and interpret Physics principles in various physical observations. Demonstrate proficiency in analyzing, applying and solving Scientific problems. PSO 5 - To use the techniques, skills, and modern technology necessary to communicate effectively with professional and ethical responsibility.	CO 1 - To understand the strength of material using young's modulus. CO 2 - To acquire knowledge of thermal behaviour of the materials. CO 3 - To understand theoretical principles of magnetism through the experiments. CO 4 - To acquire knowledge about the applications of laser. CO 5 - To improve the analytical and observation ability in Physics experiments. CO 6 - To analyze various parameters related to operational amplifiers. CO 7 - To understand the concepts involved in arithmetic and logical circuits using IC's.
51	PP232EC1	Elective Course II: a) Advanced Optics			<input checked="" type="checkbox"/>	PO 1 - To apply their knowledge, analyze complex problems, think independently, formulate and perform quality research. PO 2 - To carry out internship programmes and research projects to develop scientific and innovative ideas through effective communication.	PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics. PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations. PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics. PSO 4 - To apply and interpret Physics principles in various physical observations. Demonstrate proficiency in analyzing, applying and solving Scientific problems. PSO 5 - To use the techniques, skills, and modern technology necessary to communicate effectively with professional and ethical responsibility.	CO 1 - To discuss the transverse character of light waves and different polarization phenomenon. CO 2 - To discriminate all the fundamental processes involved in laser devices and to analyze the design and operation of the devices. CO 3 - To demonstrate the basic configuration of a fiber optic – communication system and advantages. CO 4 - To identify the properties of nonlinear interactions of light and matter. CO 5 - To interpret the group of experiments which depend for their action on an applied magnetics and electric field.
52	PP232EC2	Elective Course II: b) Non-Linear Dynamics			<input checked="" type="checkbox"/>	PO 1 - To apply their knowledge, analyze complex problems, think independently, formulate and perform quality research. PO 2 - To carry out internship programmes and research projects to develop scientific and innovative ideas through effective communication.	PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics. PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations. PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics. PSO 4 - To apply and interpret Physics principles in various physical observations. Demonstrate proficiency in analyzing, applying and solving Scientific problems. PSO 5 - To use the techniques, skills, and modern technology necessary to communicate effectively with professional and ethical responsibility.	CO 1 - To gain knowledge about the available analytical and numerical methods to solve various nonlinear systems. CO 2 - To understand the concepts of different types of coherent structures and their importance in science and technology. CO 3 - To apply and analyze simple and complex bifurcations and the routes to chaos. CO 4 - To analyze and evaluate the various types of oscillators, chaos and fractals. CO 5 - To evaluate and create the applications of solitons in telecommunication, applications of chaos in cryptography, computations and that of fractals.
53	PP232EC3	Elective Course II: c) Quantum Field Theory			<input checked="" type="checkbox"/>	PO 1 - To apply their knowledge, analyze complex problems, think independently, formulate and perform quality research. PO 2 - To carry out internship programmes and research projects to develop scientific and innovative ideas through effective communication.	PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics. PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations. PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics. PSO 4 - To apply and interpret Physics principles in various physical observations. Demonstrate proficiency in analyzing, applying and solving Scientific problems. PSO 5 - To use the techniques, skills, and modern technology necessary to communicate effectively with professional and ethical responsibility.	CO 1 - To understand the interconnection of quantum mechanics and special relativity. CO 2 - To enable the students to understand the method of quantization to various field. CO 3 - To employ the creation and annihilation operators for quantization. CO 4 - To summarize the interacting field, in quantum domain, and gives a discussion on how perturbation theory is used here. CO 5 - To understand the concept of feynman diagram.
54	PP232EC4	Elective Course III: a) Medical Physics			<input checked="" type="checkbox"/>	PO 1 - To apply their knowledge, analyze complex problems, think independently, formulate and perform quality research. PO 2 - To carry out internship programmes and research projects to develop scientific and innovative ideas through effective communication. PO 3 - To develop a multidisciplinary perspective and contribute to the knowledge capital of the globe.	PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics. PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations. PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics. PSO 4 - To apply and interpret Physics principles in various physical observations. Demonstrate proficiency in analyzing, applying and solving Scientific problems. PSO 5 - To use the techniques, skills, and modern technology necessary to communicate effectively with professional and ethical responsibility.	CO 1 - To learn the fundamentals, production and applications of X-rays. CO 2 - To understand the basics of blood pressure measurements. CO 3 - To learn about sphygmomanometer, ECG, ENG and basic principles of MRI. CO 4 - To apply knowledge on radiation Physics. CO 5 - To assess the principles of radiation protection.

55	PP232EC5	Elective Course III: b) Advanced Spectroscopy			<input checked="" type="checkbox"/>	<p>PO 1 - To apply their knowledge, analyze complex problems, think independently, formulate and perform quality research.</p> <p>PO 2 - To carry out internship programmes and research projects to develop scientific and innovative ideas through effective communication.</p> <p>PO 3 - To develop a multidisciplinary perspective and contribute to the knowledge capital of the globe.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics.</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations. Demonstrate proficiency in analyzing, applying and solving Scientific problems.</p> <p>PSO 5 - To use the techniques, skills, and modern technology necessary to communicate effectively with professional and ethical responsibility.</p>	<p>CO 1 - To comprehend set of operations associated with symmetry elements of a molecule, apply mathematical theory while working with symmetry operations and apply mathematical theory while working with symmetry operations.</p> <p>CO 2 - To use group theory as a tool to characterize molecules.</p> <p>CO 3 - To align with the recent advances in semiconductor laser technology combined sensitive spectroscopic detection techniques.</p> <p>CO 4 - To understand principle behind mossbauer spectroscopy and apply the concepts of isomer shift and quadrupole splitting to analyse molecules.</p> <p>CO 5 - To assimilate this XPS quantitative technique and the instrumentation associated with this, as applied in understanding surface of materials.</p> <p>CO 6 - To employ IR and raman spectroscopic data along with</p>
56	PP232EC6	Elective Course III: c) Characterization of Materials			<input checked="" type="checkbox"/>	<p>PO 1 - To apply their knowledge, analyze complex problems, think independently, formulate and perform quality research.</p> <p>PO 2 - To carry out internship programmes and research projects to develop scientific and innovative ideas through effective communication.</p> <p>PO 3 - To develop a multidisciplinary perspective and contribute to the knowledge capital of the globe.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics.</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations. Demonstrate proficiency in analyzing, applying and solving Scientific problems.</p> <p>PSO 5 - To use the techniques, skills, and modern technology necessary to communicate effectively with professional and ethical responsibility.</p>	<p>CO 1 - To describe the TGA, DTA, DSC and TMA thermal analysis techniques and make interpretation of the results.</p> <p>CO 2 - To use the concept of image formation in Optical microscope, developments in other specialized microscopes and their applications.</p> <p>CO 3 - To explain the working principle and operation of SEM, TEM, STM and AFM.</p> <p>CO 4 - To understand hall measurement, four-probe resistivity measurement, C.V, I-V, electrochemical, photoluminescence and electroluminescence experimental techniques with necessary theory.</p>
57	PP232SE1	Skill Enhancement Course I - NME I Solar Energy Utilization			<input checked="" type="checkbox"/>	<p>PO 1 - To apply their knowledge, analyze complex problems, think independently, formulate and perform quality research.</p> <p>PO 2 - To carry out internship programmes and research projects to develop scientific and innovative ideas through effective communication.</p> <p>PO 3 - To develop a multidisciplinary perspective and contribute to the knowledge capital of the globe.</p> <p>PO 4 - To develop innovative initiatives to sustain ecofriendly environment.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics.</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations. Demonstrate proficiency in analyzing, applying and solving Scientific problems.</p> <p>PSO 5 - To use the techniques, skills, and modern technology necessary to communicate effectively with professional and ethical responsibility.</p>	<p>CO 1 - To gain knowledge in fundamental aspects of solar energy utilization.</p> <p>CO 2 - To equip to take up related job by gaining industry exposure.</p> <p>CO 3 - To develop entrepreneurial skills.</p> <p>CO 4 - To skill the needy society with different types of solar cells.</p> <p>CO 5 - To gain industrialist mindset by utilizing renewable source of energy.</p>
58	PP2031	Core VII – Electronics	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics. (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.).</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 6 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p> <p>PSO 7 - To understand the impact of Physics in a global, economic,</p>	<p>CO 1 - To understand the basic operation, and features related to diodes, transistor, op-amps, converter and interpret.</p> <p>CO 2 - To explain about the internal circuitry and logic behind semiconductor memory devices.</p> <p>CO 3 - To assess the working of diodes, transistor, op-amps and converters.</p> <p>CO 4 - To design various filter circuits.</p>
59	PP2032	Core VIII – Condensed Matter Physics – II	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics. (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.).</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 6 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p> <p>PSO 7 - To understand the impact of Physics in a global, economic,</p>	<p>CO 1 - To understand the theory of dielectrics and analyze the dielectric properties of materials.</p> <p>CO 2 - To explain various types of magnetic phenomenon and their properties and applications.</p> <p>CO 3 - To elaborate the properties and applications.</p> <p>CO 4 - To apply the obtained concepts to challenges.</p>
60	PP20PR	Research Project	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics. (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.).</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 6 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p> <p>PSO 7 - To understand the impact of Physics in a global, economic,</p>	<p>CO 1 - To explore new areas of research in Physics.</p> <p>CO 2 - To analyze a research problem and construct tools for data collection.</p> <p>CO 3 - To write research reports and present results in the scientific community.</p> <p>CO 4 - To develop skills to serve in science related industries and agencies.</p> <p>CO 5 - To develop skills to publish articles in reputed journals.</p>
61	PP2033	Elective III – (a) BioPhysics	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics. (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.).</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 6 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p> <p>PSO 7 - To understand the impact of Physics in a global, economic,</p>	<p>CO 1 - To understand the basic structural unit and its different types.</p> <p>CO 2 - To acquire the basic knowledge on various microscopes used to analyse the cell structure.</p> <p>CO 3 - To analyse the structure of DNA, RNA and Proteins.</p> <p>CO 4 - To explain the techniques used to separate the biomolecules.</p> <p>CO 5 - To determine the interaction of molecules by using different optical and diffraction techniques.</p>

62	PP2034	Elective III – (b) Microprocessor and Microcontroller			<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics. (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.).</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 6 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p> <p>PSO 7 - To understand the impact of Physics in a global, economic, environmental and societal context</p>	<p>CO 1 - To identify the operation of various components of the microprocessor 8085 and microprocessor 8086.</p> <p>CO 2 - To relate and explain the various addressing modes and the instruction set of 8085 microprocessor.</p> <p>CO 3 - To develop skill in writing simple programs for 8085 microprocessor.</p> <p>CO 4 - To explain the architecture of 8051 microcontroller.</p> <p>CO 5 - To understand the various interrupts of 8085 microprocessor.</p>	
63	PP2035	Elective III – (c) Solar Energy Utilization			<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p> <p>PO 6 - To utilize the obtained scientific knowledge to create eco-friendly environment.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics. (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.).</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 6 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p> <p>PSO 7 - To understand the impact of Physics in a global, economic,</p>	<p>CO 1 - To understand the basic concept of heat transfer.</p> <p>CO 2 - To design the solar collectors and solve the optical loss.</p> <p>CO 3 - To relate the different types of solar water heaters.</p> <p>CO 4 - To analyze the use of nanostructures and nanomaterials in fuel cell technology.</p> <p>CO 5 - To evaluate the photovoltaic principles and compare the types of solar cells.</p>	
64	PP20S1	Self Learning Course: Physics for Lectureship Examination – I			<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics. (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.).</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 6 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p> <p>PSO 7 - To understand the impact of Physics in a global, economic,</p>	<p>CO 1 - To familiarize with a range of mathematical methods that are essential for solving advanced problems in theoretical Physics.</p> <p>CO 2 - To model mechanical systems, both in inertial and rotating frames, using lagrange and hamilton equations.</p> <p>CO 3 - To gain insight into the physical nature of electric and magnetic phenomena.</p> <p>CO 4 - To use quantum mechanical principles to analyze advanced physical phenomena of nature.</p> <p>CO 5 - To understand the theory and methods of statistical Physics and thermodynamics.</p>	
65	PP2041	Core IX – Nuclear and Elementary Particle Physics			<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics. (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.).</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 6 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p> <p>PSO 7 - To understand the impact of Physics in a global, economic,</p>	<p>CO 1 - To understand the properties of nuclear forces and outline their behavioral formulation .</p> <p>CO 2 - To analyze the different nuclear models of the nucleus and examine the application of the shell model of nucleus.</p> <p>CO 3 - To explain the characteristics and effect of radioactive decay phenomena. (alpha,beta,gamma)</p> <p>CO 4 - To discuss the outcome of various types of nuclear reactions.</p> <p>CO 5 - To examine the particle Physics phenomena and their basic theoretical description.</p>	
66	PP2042	Core X – Spectroscopy			<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics. (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.).</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 6 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p> <p>PSO 7 - To understand the impact of Physics in a global, economic,</p>	<p>CO 1 - To apply basic spectroscopic techniques. (microwave, IR, raman and NMR).</p> <p>CO 2 - To infer basic spectroscopic techniques. (microwave, IR, raman, ESR, NQR and NMR).</p> <p>CO 3 - To understand the molecular interactions in different spectroscopic methods.</p> <p>CO 4 - To analyze the characteristics of rotational spectra and vibrational energy of molecules.</p> <p>CO 5 - To utilize various spectroscopic methods suitable for characterizing molecules.</p>	
67	PP2043	Core XI – Thermodynamics and Statistical Mechanics			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics. (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.).</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 6 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p> <p>PSO 7 - To understand the impact of Physics in a global, economic,</p>	<p>CO 1 - To understand the basic concepts related to thermodynamics, microstates and macrostates.</p> <p>CO 2 - To apply principles to find relation between grand canonical and canonical partition functions.</p> <p>CO 3 - To solve the boltzmann distributions bose- einstein, fermi- dirac and maxwell.</p> <p>CO 4 - To analyze the origin of transport and non- equilibrium processes.</p> <p>CO 5 - To understand the concept of heat capacities and phasetransitions.</p>
68	PP2044	Elective IV – (a) Materials Physics and Processing Techniques			<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics. (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.).</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 6 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p> <p>PSO 7 - To understand the impact of Physics in a global, economic, environmental and societal context</p>	<p>CO 1 - To remember basic principles in material Physics.</p> <p>CO 2 - To remember basic principles in material Physics.</p> <p>CO 3 - To understand various material fabrication methods.</p> <p>CO 4 - To analyse different characterization used for materials processing.</p> <p>CO 5 - To apply different methods of material processing.</p> <p>CO 6 - To evaluate the materials and characterization tools.</p>	

69	PP2045	Elective IV – (b) Advanced Nano Physics			<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics. (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.).</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 6 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p> <p>PSO 7 - To understand the impact of Physics in a global, economic,</p>	<p>CO 1 - To identify how basic Physics can be used to describe the behaviour of electrons in nano- scale materials.</p> <p>CO 2 - To explain the variation in the electron distribution in nanostructures for different dimensions(quantum well, quantum wires & quantum dots).</p> <p>CO 3 - To analyze magneto electronics and applications of nanotechnology in various fields.</p> <p>CO 4 - To explain laser effect in quantum well, quantum wires and quantum dots.</p>	
70	PP2046	Elective IV – (c) X-ray Crystallography			<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics. (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.).</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 6 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p> <p>PSO 7 - To understand the impact of Physics in a global, economic,</p>	<p>CO 1 - To understand the sources and diffraction of X-rays.</p> <p>CO 2 - To acquire the basic knowledge on crystal systems and various properties of crystals.</p> <p>CO 3 - To explain the crystallographic data collection tools and intensity measurement method.</p> <p>CO 4 - To analyse the structure factor and intensity of diffracted peaks.</p> <p>CO 5 - To obtain the refined crystal structure by applying mathematical calculations.</p>	
71	PP20P3	Practical III– Advanced Physics Lab – III(Electronics)			<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 6 - To utilize the obtained scientific knowledge to create eco- friendly environment.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics. (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.).</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 6 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p> <p>PSO 7 - To understand the impact of Physics in a global, economic,</p>	<p>CO 1 - To analyse the working of code converters (BCD / gray, excess 3).</p> <p>CO 2 - To design various synchronous and asynchronous sequential circuits and study their working.</p> <p>CO 3 - To analyse the applications of op- amps (sine, triangular wavegenerator, low, high and band pass filters).</p> <p>CO 5 - To analyse the behavior of counters (up/down, mod, ring).</p> <p>CO 5 - To analyse the working of electronic circuits (multiplexer, demultiplexer, adder, subtractor).</p>	
72	PP20P4	Practical IV –Advanced Physics Lab – IV (Microprocessor and Micro Controller)			<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 6 - To utilize the obtained scientific knowledge to create eco- friendly environment.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics. (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.).</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 6 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p> <p>PSO 7 - To understand the impact of Physics in a global, economic,</p>	<p>CO 1 - To experiment with assembly language programming on 8085 microprocessor (addition, subtraction, multiplication & division).</p> <p>CO 2 - To apply assembly language programming on microprocessor (data Manipulation, square of numbers, counters).</p> <p>CO 3 - To analyse the interfacing of microprocessor 8085 with I/O devices (A/D& D/A, stepper motor).</p> <p>CO 4 - To apply assembly language programs for 8051 microcontroller.</p>	
73	PP20S2	Self Learning Course: Physics for Lecturership Examination – II			<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics. (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.).</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 6 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p> <p>PSO 7 - To understand the impact of Physics in a global, economic,</p>	<p>CO 1 - To understand the physical construction, working and operational characteristics of semiconductor devices.</p> <p>CO 2 - To attain knowledge on the structure and dynamics of the molecules through various theories.</p> <p>CO 3 - To develop analytical thinking to understand the phenomenon that decide various properties of solids.</p> <p>CO 4 - To know the scientific, environmental and technological applications of nuclear Physics.</p> <p>CO 5 - To study the fundamentals of wave mechanics.</p>	
2022-2023									
74	PC2011	Major Core I - Mechanics	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p>	<p>CO 1 - To understand and define the laws involved in mechanics.</p> <p>CO 2 - To apply conservation laws in collision experiments.</p> <p>CO 3 - To interpret the principles of gravitation and moment of inertia through theory and experiments.</p> <p>CO 4 - To analyze the fundamentals of center of mass and rocket motion.</p> <p>CO 5 - To apply pressure velocity relation in fluid flow in the field of fluid dynamics.</p> <p>CO 6 - To understand and define the laws involved in mechanics.</p> <p>CO 7 - To apply conservation laws in collision experiments.</p>	
75	AP2011	Allied I- Allied Physics I for Mathematics	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p>	<p>CO 1 - To acquire knowledge on elementary ideas of electricity and magnetism, electronics, optics and nuclear Physics.</p> <p>CO 2 - To analyze the concepts and study their applications in the field of electricity and magnetism, electronics, optics and nuclear Physics.</p> <p>CO 3 - To apply their depth knowledge of Physics in day today life.</p> <p>CO 4 - To analyze the fundamentals of center of mass and rocket motion.</p> <p>CO 5 - To develop their knowledge and carry out the practical by</p>	
76	PNM201	Non Major Elective (NME) – Physics in Everyday Life I	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p>	<p>CO 1 - To understand their knowledge of basic scientific principles and fundamental concepts in Physics.</p> <p>CO 2 - To recall the various phenomena of sound waves applied in day today life.</p> <p>CO 3 - To understand the basic laws of Physics and different forces involved in nature.</p> <p>CO 4 - To explain the Physics concepts behind the sports.</p> <p>CO 5 - To categorize different characteristic nature of light and its properties like refraction, reflection and diffraction.</p>	

77	PC2021	Major Core II – Properties of matter and Sound	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p>	<p>CO 1 - To identify the materials suitable for construction of buildings, based on the moduli of elasticity.</p> <p>CO 2 - To paraphrase the properties of liquids and its determination.</p> <p>CO 3 - To analyze the Physics of sound and its applications.</p> <p>CO 4 - To integrate the concepts of acoustic comfort and better understanding of the theories used in building acoustics.</p>
78	AP2021	Allied II – Allied Physics II for Mathematics	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p>	<p>CO 1 - To acquire knowledge on elementary ideas of electricity and magnetism, electronics, optics and nuclear Physics.</p> <p>CO 2 - To analyze the concepts and study their applications in the field of electricity and magnetism, electronics, optics and nuclear Physics.</p> <p>CO 3 - To apply their depth knowledge of Physics in day today life.</p> <p>CO 4 - To develop their knowledge and carry out the practical by applying these concepts.</p>
79	PNM202	Non Major Elective (NME)- Physics in Every Day Life II	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p>	<p>CO 1 - To understand the principle and working of simple devices used in day to day life.</p> <p>CO 2 - To identify the symbols used for various electronic components and infer the electronic tools.</p> <p>CO 3 - To distinguish different heavenly bodies (star,planet,comets, galaxies).</p> <p>CO 4 - To recall various applications of Physics concepts in everyday life.</p>
80	PC20P1	Major Practical I - Physics Lab I	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects in collaboration with other institution.</p> <p>PO 4 - To equip students with hands on training through various courses to enhance entrepreneurship skills.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p>	<p>CO 1 - To acquire knowledge on elementary ideas of electricity and magnetism, electronics, optics and nuclear Physics.</p> <p>CO 2 - To analyze the concepts and study their applications in the field of electricity and magnetism, electronics, optics and nuclear Physics.</p> <p>CO 3 - To apply their depth knowledge of Physics in day today life.</p> <p>CO 4 - To develop their knowledge and carry out the practical by applying these concepts.</p>
81	AP20P1	Allied Practical – General Physics Lab	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects in collaboration with other institution.</p> <p>PO 7 - To equip students with hands on training through various courses to enhance entrepreneurship skills.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p>	<p>CO 1 - To acquire knowledge on elementary ideas of electricity and magnetism, electronics, optics and nuclear Physics.</p> <p>CO 2 - To analyze the concepts and study their applications in the field of electricity and magnetism, electronics, optics and nuclear Physics.</p> <p>CO 3 - To apply their depth knowledge of Physics in day today life.</p> <p>CO 4 - To develop their knowledge and carry out the practical by applying these concepts.</p>
82	PC2031	Major Core III – Heat and Thermodynamics	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p>	<p>CO 1 - To understand experimental methods to determine the transmission of heat.</p> <p>CO 2 - To analyze the work and heat interactions associated with a prescribed process path and to perform a analysis of a flow system.</p> <p>CO 3 - To understand the basic concepts of thermodynamics like system, properties, equilibrium, pressure, specific volume,temperature and the laws of thermodynamics.</p> <p>CO 4 - To evaluate entropy changes in a wide range of processes and determine the reversibility or irreversibility of a process from</p>
83	PC2032	Major – Elective - I a) Non Conventional Energy Sources	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects in collaboration with other institution.</p> <p>PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p>	<p>CO 1 - To apply the solar energy in various sectors.</p> <p>CO 2 - To explain the basic principles of wind energy conversion, various biomass conversion processes and its classification.</p> <p>CO 3 - To discuss the geothermal energy resources and chemical energy resources. (fuel cells).</p> <p>CO 4 - To solve the present and future energy crisis.</p>
84	PC2033	Major – Elective - I b) Fundamentals of Physics - I	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p>	<p>CO 1 - To understand the fundamentals of dynamics.</p> <p>CO 2 - To determine the behavior of a ray at any optical surface (lenses, prisms).</p> <p>CO 3 - To outline the extraction of useful energy from earth,ocean, wind and sun.</p> <p>CO 4 - To determine the significance of steady current and alternating current.</p> <p>CO 5 - To apply kirchoff's laws to simple electrical circuits.</p>
85	PC2034	Major – Elective - I c) Microprocessor Fundamentals	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p>	<p>CO 1 - To know the basic ideas on microprocessor, memory and I/O devices.</p> <p>CO 2 - To familiar with the basic concepts of microprocessor architecture and interfacing.</p> <p>CO 3 - To acquire skills in the programming instruction sets of microprocessors.</p> <p>CO 4 - To apply the programming instructions to perform simple programs using microprocessor.</p> <p>CO 5 - To apply kirchoff's laws to simple electrical circuits.</p>
86	AP2031	Allied I – Allied Physics I for Chemistry	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p>	<p>CO 1 - To understand to know, various modulus involved in the materials, flow of liquids due to viscous forces, transmission of heat due to process of conduction, convection and radiation and various laws involved in heat transformation, various thermodynamic laws.</p> <p>CO 2 - To analyze the concepts and study the concept of entropy, and the phenomenon like interference and diffraction, optical activity of liquids and its uses.</p> <p>CO 3 - To apply their depth knowledge of Physics in day today life.</p>

87	PC20S1	Self Learning Course - Physics for Competitive Examination – I	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p> <p>PO 7 - To equip students with hands on training through various courses to enhance</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p>	<p>CO 1 - To recall the principles of mechanics and conservation laws.</p> <p>CO 2 - To understand the concept of fluid dynamics.</p> <p>CO 3 - To categorize different kinds of oscillations.</p> <p>CO 4 - To examine the various aberrations and geometry involved in optics.</p> <p>CO 5 - To apply the laws of thermodynamics on heat phenomena.</p>
88	PC2041	Major Core IV – Optics and Spectroscopy	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p>	<p>CO 1 - To understand the knowledge of geometric optics is helps in the practical design of many optical systems and instruments including aberrations in lens system.</p> <p>CO 2 - To determine the behavior of a ray and wave at any optical surface.</p> <p>CO 3 - To analyze the intensity variation of light due to polarization, interference and diffraction.</p> <p>CO 4 - To study of phenomena interference, diffraction, and polarization lays the foundation for an understanding of concepts such as holograms, interferometers.</p>
89	PC2042	Major – Elective - II a) Computer Programming in C++	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p>	<p>CO 1 - To understand the different types of operators and expressions in C++ language.</p> <p>CO 2 - To implement different operation an arrays and use function to solve the given problem.</p> <p>CO 3 - To understand member functions and constructors.</p> <p>CO 4 - To analyze pointers, operator overloading and inheritance.</p> <p>CO 5 - To analyze input/output operations.</p>
90	PC2043	Major – Elective - II b) Medical Physics	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p>	<p>CO 1 - To understand the anatomical terms of the body.</p> <p>CO 2 - To explain the physical dynamics of the body.</p> <p>CO 3 - To analyse the heat and pressure system of the body.</p> <p>CO 4 - To discuss the optical and electrical behavior of the human body.</p> <p>CO 5 - To gain knowledge and application ideas regarding diagnostic systems.</p>
91	PC2044	Major – Elective - II c) Optoelectronics	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p>	<p>CO 1 - To explain the various methods of propagation of light waves through various types of fibres .</p> <p>CO 2 - To understand the basic concepts of fiber optics and types of fibers.</p> <p>CO 3 - To explain the structure and performance of LEDs and Lasers.</p> <p>CO 4 - To classify the optical sources and detectors and to discuss their principle.</p> <p>CO 5 - To discuss the channel impairments such as losses and dispersion.</p>
92	AP2041	Allied II – Allied Physics II for Chemistry	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects in collaboration with other institution.</p> <p>PO 7 - To equip students with hands on training through various courses to enhance entrepreneurship skills.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p>	<p>CO 1 - To acquire knowledge on elementary ideas of electricity and magnetism, electronics, atomic and nuclear Physics .</p> <p>CO 2 - To analyze the concepts and study their applications in the field of electricity and magnetism, electronics and nuclear Physics.</p> <p>CO 3 - To apply their depth knowledge of Physics in day today life.</p> <p>CO 4 - To develop their knowledge and carry out the practical by applying the concepts of a rectifier, amplifiers and oscillator, basic digital electronics principles through logic gates and the laws governing them.</p>
93	PC20P2	Major Practical II - Physics Lab II	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects in collaboration with other institution.</p> <p>PO 7 - To equip students with hands on training through various courses to enhance entrepreneurship skills.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p>	<p>CO 1 - To understand the scientific method and an ability to apply the scientific method in practice.</p> <p>CO 2 - To recall the basic experiments; improve the basic skills and attitude which help them to apply these skills in their field of Physics.</p> <p>CO 3 - To understand the practical knowledge of various bridges (sauty's and owen's bridge) by demonstration of experiments.</p> <p>CO 4 - To verify the thevenin and nortons theorem.</p> <p>CO 5 - To compile a record of an experiment in a clear and logical written form (e.g., lab manual report, record) augmented with figures and graphs where appropriate.</p> <p>CO 6 - To analyze the physical principle involved in the various</p>
94	AP20P1	Allied Practical – General Physics Lab	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects in collaboration with other institution.</p> <p>PO 7 - To equip students with hands on training through various courses to enhance entrepreneurship skills.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p>	<p>CO 1 - To understand the basic principles of Physics through experiments.</p> <p>CO 2 - To measure and determine the various physical parameters.</p> <p>CO 3 - To develop an idea about the handling of various instruments.</p> <p>CO 4 - To get an idea about basic scientific knowledge and implications of its broad working principle.</p> <p>CO 5 - To analyzing, interpreting and evaluating data.</p> <p>CO 6 - To build a foundation in scientific career.</p>
95	PC20S2	Self Learning Course: Physics for Competitive Examination – II	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p> <p>PO 7 - To equip students with hands on training through various courses to enhance</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p>	<p>CO 1 - To discuss the principles and generation of electric charges.</p> <p>CO 2 - To identify the different types of magnetic materials.</p> <p>CO 3 - To correlate the mechanisms involved between magnetism and electricity.</p> <p>CO 4 - To discuss the principles behind the phenomena of atomic Physics and nuclear reactions.</p> <p>CO 5 - To apply the laws of thermodynamics on heat phenomena.</p> <p>CO 6 - To differentiate metals, conductors and insulators.</p> <p>CO 7 - To recognize the elements of microprocessors and computers.</p>
96	PC20S1	Major Core V – Classical and Statistical Mechanics	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p>	<p>CO 1 - To understand the basic mechanical concepts related to system of particles.</p> <p>CO 2 - To apply various mechanical principles to find solution for physical problem.</p> <p>CO 3 - To solve the equations of motion using hamiltonian formalism.</p> <p>CO 4 - To explain the fundamental postulates of statistical mechanics and maxwell boltzmann statistics.</p> <p>CO 5 - To understand and develop a scientific knowledge in quantum statistics.</p>

97	PC2052	Major Core VI - Analog Electronics			<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p>	<p>CO 1 - To understand the fundamental principles of semiconductors including P-N junctions and zener diode.</p> <p>CO 2 - To illustrate network theorems like thevenin's theorem, norton's theorem etc.,</p> <p>CO 3 - To analyze the operation of transistor, amplifier, oscillator and multivibrator.</p> <p>CO 4 - To demonstrate practical skills in the simulation, construction and testing of simple electrical and electronic circuits.</p> <p>CO 5 - To understand and develop a scientific knowledge in</p>
98	PC2053	Major Core VII - Solid State Physics			<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p>	<p>CO 1 - To illustrate various types of bonding present in solids with example.</p> <p>CO 2 - To explain the various crystal parameters and structures.</p> <p>CO 3 - To discuss the various theories involved in magnetic materials, (dia, para, ferro, ferri and antiferro magnetism).</p> <p>CO 4 - To describe polarization processes and analyze the information contained in the temperature and frequency dependence of dielectric materials.</p> <p>CO 5 - To analyze the structure and physical properties of semiconductors.</p>
99	PC20PR	Research Project	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects in collaboration with other institution.</p> <p>PO 7 - To equip students with hands on training through various courses to enhance entrepreneurship skills.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p>	<p>CO 1 - To explore new areas of research in Physics.</p> <p>CO 2 - To analyze a research problem and construct tools for data collection.</p> <p>CO 3 - To write research reports and present results in the scientific community.</p> <p>CO 4 - To develop skills to serve in science related industries and agencies.</p>
100	PC2061	Major Core VIII – Relativity and Quantum Mechanics	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p>	<p>CO 1 - To gain knowledge in the concepts of special and theory of relativity.</p> <p>CO 2 - To evolve ideas about dual nature of matter.</p> <p>CO 3 - To recognize basic terms in quantum mechanics and different operator mechanism.</p> <p>CO 4 - To apply of schrödinger's equation to micro system.</p>
101	PC2062	Major Core IX – Digital and Communication Electronics	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p>	<p>CO 1 - To understand the basic operation, and features related to Logic gates and interprets their applications.</p> <p>CO 2 - To acquire knowledge on number system, arithmetic building blocks, and memories.</p> <p>CO 3 - To understand the fundamental concepts of logic gates, counters, registers, fiber optics, etc.,</p> <p>CO 4 - To develop skill to build and troubleshoot combinational digital circuits.</p> <p>CO 5 - To understand AM, FM and PM modulation and demodulation techniques.</p> <p>CO 6 - To analyze the concepts trained in the computer lab activities and provide an understanding of data acquisition and analysis, assess the basic concepts of fiber optics and types of fiber diodes, transistor, op-amps and converters.</p>
102	PC2063	Major Core X - Nuclear Physics			<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p>	<p>CO 1 - To understand the basics of nuclear Physics that treats atomic nuclei as self-bound many-body quantum systems.</p> <p>CO 2 - To acquire knowledge about particle- antiparticle, decay processes and their outcomes.</p> <p>CO 3 - To basic interaction between fundamental particles.</p>
103	PC2064	Major – Elective – III a) Mathematical Physics			<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p>	<p>CO 1 - To illustrate linear dependence and combination of vectors as quantities in Physics.</p> <p>CO 2 - To solve ordinary and partial differential equations related to physical science.</p> <p>CO 3 - To evaluate problems in matrices.</p> <p>CO 4 - To adapt laplace transform technique to obtain the laplace series of periodic functions of Physics.</p> <p>CO 5 - To understand and manipulate random variables using the theory of probability including tools of probability transformation and characteristic functions.</p>
104	PC2065	Major – Elective – III b) NanoPhysics			<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p>	<p>CO 1 - To infer the history of nanotechnology and explain the synthesis of nanomaterials.</p> <p>CO 2 - To interpret quantum well, quantum wires and quantum dots.</p> <p>CO 3 - To explain the carbon nanotubes and its applications.</p> <p>CO 4 - To discuss the applications of nanotechnology in various fields.</p>
105	PC2066	Major – Elective – III c) AstroPhysics	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p>	<p>CO 1 - To perceive the historical evolution of solar system and planets.</p> <p>CO 2 - To describe the principles of Physics in the formation of astronomical objects like planets-Satellites - Asteroids and Comets.</p> <p>CO 3 - To examine the requirements and limitations of instrumentation for modern astrophysical observations (Optical telescopes and Radio telescopes).</p> <p>CO 4 - To examine the requirements and limitations of instrumentation for modern astrophysical observations (Optical telescopes and Radio telescopes).</p> <p>CO 5 - To analyse the formation of stars, pulsars, Neutron stars and Black Holes.</p> <p>CO 6 - To interpret the observations of galaxies, star clusters,</p>

106	PC20P3	Major Practical III - Physics Lab III				<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects in collaboration with other institution.</p> <p>PO 7 - To equip students with hands on training through various courses to enhance entrepreneurship skills.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p>	<p>CO 1 - To demonstrate the experimental techniques and develop competence in handling optical instruments.</p> <p>CO 2 - To analyze the diffraction and dispersion phenomena in optical elements (grating or prism) using spectrometer.</p> <p>CO 3 - To develop practical hands-on experience applying widely used techniques to investigate optical phenomena. (Oblique incidence, i - d curve).</p> <p>CO 4 - To record, analyze, interpret and critically evaluate Cauchy's constant and Hartmann's interpolation formula experimentally.</p>
107	PC20P4	Major Practical IV - Physics Lab IV	☑			<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects in collaboration with other institution.</p> <p>PO 7 - To equip students with hands on training through various courses to enhance entrepreneurship skills.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p>	<p>CO 1 - To develop knowledge and skills relating to electricity and electronics through hands-on learning experience.</p> <p>CO 2 - To understand the fundamental concepts and mechanisms used in Digital Electronics. (Logic gates and Flip - Flops).</p> <p>CO 3 - To design and analyse digital systems / logical circuits. (De Morgans theorems using IC).</p> <p>CO 4 - To analyse and design various combinational and sequential circuits. (Flip flop, Encoder, Decoder, Op-amp etc.).</p> <p>CO 5 - To infer the operation of basic logic gates, understand Boolean algebra and simplify simple Boolean functions by using</p>
108	PC20P5	Major Practical V - Physics Lab V	☑			<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects in collaboration with other institution.</p> <p>PO 7 - To equip students with hands on training through various courses to enhance entrepreneurship skills.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p>	<p>CO 1 - To understand the principles of object oriented program to construct computer programs and modeling of experimental data for the solution of problems in Physics. (period of a pendulum and Young's modulus of a material).</p> <p>CO 2 - To apply object oriented programming techniques to solve computing problems. (addition, subtraction, multiplication and division).</p> <p>CO 3 - To develop programs using functions and classes. (objects, array of objects, friend functions, passing and returning objects, function declaration with/without using the return statement).</p> <p>CO 4 - To formulate the applications of pointers and virtual functions. Distinguish formatted and unformatted I/O operations.</p> <p>CO 5 - To develop programs using constructor, destructor, operator overloading and inheritance. (generate a series of Fibonacci numbers using constructor in the scope of class definition / out of the class definition using the scope resolution</p>
109	PSK206	Skill Enhancement Course (SEC) – Basic Electrical Circuits and Instruments	☑			<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects in collaboration with other institution.</p> <p>PO 7 - To equip students with hands on training through various courses to enhance entrepreneurship skills.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p>	<p>CO 1 - To recall the basic definitions and units of electrical quantities.</p> <p>CO 2 - To analyze the circuit elements and their connections.</p> <p>CO 3 - To develop their own circuits using electrical wiring.</p> <p>CO 4 - To compare the Physics concepts behind various electrical instruments and appliances (Voltmeter, Ammeter, Incandescent lamp, fluorescent bulb, Choke and Starter).</p> <p>CO 5 - To demonstrate uses of tester & Multimeter, LDR, Microphone, loudspeaker, etc.</p> <p>CO 6 - To test for the working of electrical circuits and appliances</p>
110	PP2011	Core I – Classical Mechanics	☑	☑		<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics. (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.).</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 6 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p> <p>PSO 7 - To understand the impact of Physics in a global, economic, environmental and societal context.</p>	<p>CO 1 - To understand the basic mechanical concepts related to single and system of particles.</p> <p>CO 2 - To apply various mechanical principles to find solution for physical problems.</p> <p>CO 3 - To solve the equations of motion using Lagrangian, Hamiltonian and Hamilton-Jacobi equations.</p> <p>CO 4 - To explain the origin of coriolis and centrifugal terms in the equation of motion in a rotating frame.</p> <p>CO 5 - To understand and develop a scientific knowledge in central force problems and relativity.</p>
111	PP2012	Core II – Mathematical Physics	☑	☑	☑	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics. (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.).</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 6 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p> <p>PSO 7 - To understand the impact of Physics in a global, economic, environmental and societal context.</p>	<p>CO 1 - To apply the various theorems in complex analysis to evaluate definite integrals.</p> <p>CO 2 - To determine the series solutions and the recurrence relations (Bessel, Legendre and Hermite differential equations) and solve problems associated with them.</p> <p>CO 3 - To discuss the basic principles and methods used for the analysis of partial differential equations and apply the techniques to related problems.</p> <p>CO 4 - To discuss the concepts of Fourier, Laplace and inverse Laplace transform, tensors, group theory and their properties.</p> <p>CO 5 - To develop expertise in mathematical techniques required in Physics and to enhance problem solving skills.</p>
112	PP2013	Core III – Quantum Mechanics - I	☑	☑		<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics. (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.).</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 6 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p> <p>PSO 7 - To understand the impact of Physics in a global, economic, environmental and societal context.</p>	<p>CO 1 - To summarize the concept of wave function and the postulates of quantum mechanics.</p> <p>CO 2 - To formulate time dependent and time independent equation and solve them for simple potentials.</p> <p>CO 3 - To evaluate the eigen values and eigen function spin and total angular momenta and determine the matrices.</p> <p>CO 4 - To analyze the principles of quantum theory, equation of motion, scattering theory and angular momentum.</p>
113	PP2014	Elective I – (a) Advanced Nuclear Physics	☑	☑		<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics. (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.).</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 6 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p> <p>PSO 7 - To understand the impact of Physics in a global, economic, environmental and societal context.</p>	<p>CO 1 - To understand the basic knowledge on nuclei and neutron to know other factors like properties and scattering.</p> <p>CO 2 - To examine the neutron interactions to formulate probability, diffusion, Fermi-age equations.</p> <p>CO 3 - To analyse the working of nuclear reactors and its reaction to produce nuclear energy.</p> <p>CO 4 - To study the nuclear fusion reaction and apply its principle for stellar energy.</p>

114	PP2015	Elective I – (b) Molecular Physics			<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics. (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.).</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 6 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p> <p>PSO 7 - To understand the impact of Physics in a global, economic,</p>	<p>CO 1 - To understand the chemical bonding of molecules and various theories of homo and hetero nuclear diatomic molecules.</p> <p>CO 2 - To analyze the symmetry operations and molecular orbital theory.</p> <p>CO 3 - To analyse the electronic properties of molecules, Newtonian and Hamiltonian dynamics and Phase space trajectories.</p> <p>CO 4 - To understand the molecular collisions and different energies caused by reactive collisions.</p> <p>CO 5 - To evaluate the transport of electron and the formation of electronic bands and spectra.</p>
115	PP2016	Elective I – (c) Numerical Methods			<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics. (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.).</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 6 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p> <p>PSO 7 - To understand the impact of Physics in a global, economic,</p>	<p>CO 1 - To apply various interpolation methods and finite difference concepts.</p> <p>CO 2 - To analyze the numerical solutions of linear and non linear equations.</p> <p>CO 3 - To utilize various numerical methods for differentiation and integration.</p> <p>CO 4 - To solve ordinary differential equations whenever and wherever routine methods are not applicable.</p>
116	PP2021	Core IV – Electromagnetic Theory			<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics. (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.).</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 6 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p> <p>PSO 7 - To understand the impact of Physics in a global, economic,</p>	<p>CO 1 - To summarize the fundamental laws of electromagnetics based on Maxwell's equations.</p> <p>CO 2 - To enumerate the concept of energy in electrostatic and magnetostatic fields.</p> <p>CO 3 - To illustrate the electrical properties of materials.</p> <p>CO 4 - To solve the wave equation as plane waves in source.</p> <p>CO 5 - To analyze the wave polarization and reflection / transmission of plane waves in homogenous media.</p>
117	PP2022	Core V – Quantum Mechanics – II		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics. (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.).</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 6 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p> <p>PSO 7 - To understand the impact of Physics in a global, economic,</p>	<p>CO 1 - To enumerate time independent perturbation theory and use approximation methods. (variation principle and WKB method) to solve simple problems (ground state helium, barrier penetration, etc).</p> <p>CO 2 - To analyze time dependent perturbation theory to discuss absorption and emission of radiation for harmonic perturbation.</p> <p>CO 3 - To interpret quantum theory of atomic and molecular structure.</p> <p>CO 4 - To formulate Klein- Gordon and Dirac equations and discuss the applications (particle in a Coulomb field, Spin of electron).</p>
118	PP2023	Core VI – Condensed Matter Physics – I		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics. (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.).</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 6 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p> <p>PSO 7 - To understand the impact of Physics in a global, economic, environmental and societal context.</p>	<p>CO 1 - To differentiate between different lattice types and explain the concepts of reciprocal lattice and crystal diffraction.</p> <p>CO 2 - To analyze various crystal imperfections and ordered phases of crystal.</p> <p>CO 3 - To explain the theory of lattice vibrations and analyze the thermal properties of solids.</p> <p>CO 4 - To formulate the problem of electrons in a periodic potential.</p>
119	PP2024	Elective II – (a) Experimental design			<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics. (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.).</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 6 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p> <p>PSO 7 - To understand the impact of Physics in a global, economic,</p>	<p>CO 1 - To understand the principle and working of transducers.</p> <p>CO 2 - To examine the measurement systems and errors in it.</p> <p>CO 3 - To analyse the X ray measurements and to find TEM, SEM, EDS, FESEM, AFM, UV Vis, IR, FTIR characterizations.</p> <p>CO 3 - To get an introduction and idea on optical fibres.</p>
120	PP2025	Elective II – (b) Introductory Astronomy, Astro Physics & Cosmology		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics. (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.).</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 6 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p> <p>PSO 7 - To understand the impact of Physics in a global, economic,</p>	<p>CO 1 - To perceive the historical evolution of solar system and universe.</p> <p>CO 2 - To describe the principles of Physics in the formation of astronomical objects like planets, satellites, asteroids and comets.</p> <p>CO 3 - To gain experience with measurement techniques and equipment and develop the ability to assess certainties and assumptions.</p> <p>CO 4 - To interpret the observations of galaxies, dark matter, quasars and pulsars.</p> <p>CO 5 - To achieve a good understanding of physical laws and principles in cosmology.</p>

121	PP2026	Elective II – (c) Laser Physics			<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics. (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.).</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 6 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p> <p>PSO 7 - To understand the impact of Physics in a global, economic,</p>	<p>CO 1 - To develop knowledge in the basics of lasers.</p> <p>CO 2 - To enhance comprehension in the principles of lasers .</p> <p>CO 3 - To analyse the control of laser opteries.</p> <p>CO 4 - To familiarize with the diverse applications of lasers.</p>
122	PP20P1	Practical I – Advanced Physics Lab – I (General Physics)			<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 6 - To utilize the obtained scientific knowledge to create eco- friendly environment.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics. (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.).</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 6 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p> <p>PSO 7 - To understand the impact of Physics in a global, economic,</p>	<p>CO 1 - To demonstrate practical skills to work with complex problems and advanced experimental equipment.</p> <p>CO 2 - To develop a practical knowledge in Hall Effect and in determination of Magneto resistance.</p> <p>CO 3 - To develop practical experience in LASER experiments.</p> <p>CO 4 - To measure and compare the dielectric constant of various liquids.</p> <p>CO 5 - To apply ultrasonic interferometers to determine the velocity of sound.</p>
123	PP20P2	Practical II – Advanced Physics Lab – II (Programming with C++)			<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 6 - To utilize the obtained scientific knowledge to create eco- friendly environment.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics. (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.).</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 6 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p> <p>PSO 7 - To understand the impact of Physics in a global, economic,</p>	<p>CO 1 - To understand the basic concept of Object Oriented Programming (OOP).</p> <p>CO 2 - To interpret the theoretical formulation for physical phenomena and apply experimental numerical.</p> <p>CO 3 - To simulations methods to find the solution.</p> <p>CO 4 - To apply computational methods and numerical algorithms to problems in advanced Physics using C++ programming.</p> <p>CO 5 - To develop a basic knowledge in high level programming languages.</p>
124	PP2031	Core VII – Electronics	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics. (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.).</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 6 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p> <p>PSO 7 - To understand the impact of Physics in a global, economic,</p>	<p>CO 1 - To understand the basic operation and features related to diodes, transistor, op– amps, converter and interpret.</p> <p>CO 2 - To explain about the internal circuitry and logic behind semiconductor memory devices.</p> <p>CO 3 - To assess the working of diodes, transistor, op– amps and converters.</p> <p>CO 4 - To design various filter circuits.</p>
125	PP2032	Core VIII – Condensed MatterPhysics – II	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics. (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.).</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 6 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p> <p>PSO 7 - To understand the impact of Physics in a global, economic,</p>	<p>CO 1 - To understand the theory of dielectrics and analyze the dielectric properties of materials.</p> <p>CO 2 - To explain various types of magnetic phenomenon and their properties and applications.</p> <p>CO 3 - To elaborate the properties and applications.</p> <p>CO 4 - To apply the obtained concepts to challenges.</p>
126	PP20PR	Research Project	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics. (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.).</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 6 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p> <p>PSO 7 - To understand the impact of Physics in a global, economic,</p>	<p>CO 1 - To explore new areas of research in Physics.</p> <p>CO 2 - To analyze a research problem and construct tools for data collection.</p> <p>CO 3 - To write research reports and present results in the scientific community.</p> <p>CO 4 - To develop skills to serve in science related industries and agencies.</p> <p>CO 5 - To develop skills to publish articles in reputed journals.</p>
127	PP2033	Elective III – (a) BioPhysics			<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics. (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.).</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 6 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p> <p>PSO 7 - To understand the impact of Physics in a global, economic, environmental and societal context</p>	<p>CO 1 - To understand the basic structural unit and its different types.</p> <p>CO 2 - To acquire the basic knowledge on various microscopes used to analyse the cell structure.</p> <p>CO 3 - To analyse the structure of DNA, RNA and Proteins.</p> <p>CO 4 - To explain the techniques used to separate the biomolecules.</p> <p>CO 5 - To determine the interaction of molecules by using different optical and diffraction techniques.</p>

128	PP2034	Elective III – (b) Microprocessor and Microcontroller			<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics. (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.).</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 6 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p> <p>PSO 7 - To understand the impact of Physics in a global, economic,</p>	<p>CO 1 - To identify the operation of various components of the microprocessor 8085 and microprocessor 8086.</p> <p>CO 2 - To relate and explain the various addressing modes and the instruction set of 8085 microprocessor.</p> <p>CO 3 - To develop skill in writing simple programs for 8085 microprocessor.</p> <p>CO 4 - To explain the architecture of 8051 microcontroller.</p> <p>CO 5 - To understand the various interrupts of 8085 microprocessor.</p>	
129	PP2035	Elective III – (c) Solar Energy Utilization			<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p> <p>PO 6 - To utilize the obtained scientific knowledge to create eco-friendly environment</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics. (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.).</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 6 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p> <p>PSO 7 - To understand the impact of Physics in a global, economic,</p>	<p>CO 1 - To understand the basic concept of heat transfer.</p> <p>CO 2 - To design the solar collectors and solve the optical loss.</p> <p>CO 3 - To relate the different types of solar water heaters.</p> <p>CO 4 - To analyze the use of nanostructures and nanomaterials in fuel cell technology.</p> <p>CO 5 - To evaluate the photo voltaic principles and compare the types of solar cells.</p>	
130	PP20S1	Self Learning Course: Physics for Lectureship Examination – I			<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics. (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.).</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 6 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p> <p>PSO 7 - To understand the impact of Physics in a global, economic,</p>	<p>CO 1 - To familiarize with a range of mathematical methods that are essential for solving advanced problems in theoretical Physics.</p> <p>CO 2 - To model mechanical systems, both in inertial and rotating frames, using Lagrange and Hamilton equations.</p> <p>CO 3 - To gain insight into the physical nature of electric and magnetic phenomena.</p> <p>CO 4 - To use quantum mechanical principles to analyze advanced physical phenomena of nature.</p> <p>CO 5 - To understand the theory and methods of statistical Physics and thermodynamics.</p>	
131	PP2041	Core IX – Nuclear and Elementary Particle Physics			<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics. (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.).</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 6 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p> <p>PSO 7 - To understand the impact of Physics in a global, economic,</p>	<p>CO 1 - To understand the properties of nuclear forces and outline their behavioral formulation.</p> <p>CO 2 - To analyze the different nuclear models of the nucleus and examine the application of the shell model of nucleus.</p> <p>CO 3 - To explain the characteristics and effect of radioactive decay phenomena. (alpha,beta,gamma) discuss the outcome of various types of nuclear reactions.</p> <p>CO 4 - To examine the particle Physics phenomena and their basic theoretical description.</p>	
132	PP2042	Core X – Spectroscopy			<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics. (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.).</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 6 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p> <p>PSO 7 - To understand the impact of Physics in a global, economic,</p>	<p>CO 1 - To apply basic spectroscopic techniques (Microwave, IR,Raman and NMR).</p> <p>CO 2 - To infer basic spectroscopic techniques (Microwave, IR,Raman, ESR, NQR and NMR).</p> <p>CO 3 - To understand the molecular interactions in different spectroscopic methods.</p> <p>CO 4 - To analyze the characteristics of rotational spectra and vibrational energy of molecules.</p> <p>CO 5 - To utilize various spectroscopic methods suitable for characterizing molecules.</p>	
133	PP2043	Core XI –Thermodynamics and Statistical Mechanics			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics. (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.).</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 6 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p> <p>PSO 7 - To understand the impact of Physics in a global, economic,</p>	<p>CO 1 - To understand the basic concepts related to thermodynamics, microstates and macrostates.</p> <p>CO 2 - To apply principles to find relation between grand canonical and canonical partition functions.</p> <p>CO 3 - To solve the Boltzmann distributions Bose- Einstein, Fermi- Dirac and Maxwell.</p> <p>CO 4 - To analyze the origin of transport and non- equilibrium processes.</p> <p>CO 5 - To understand the concept of heat capacities and phase transitions.</p>
134	PP2044	Elective IV – (a) Materials Physics and Processing Techniques			<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics. (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.).</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 6 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p> <p>PSO 7 - To understand the impact of Physics in a global, economic,</p>	<p>CO 1 - To remember basic principles in material Physics.</p> <p>CO 2 - To understand various material fabrication methods.</p> <p>CO 3 - To analyse different characterization used for materials processing.</p> <p>CO 4 - To apply different methods of material processing.</p> <p>CO 5 - To evaluate the materials and characterization tools.</p>	

135	PP2045	Elective IV – (b) Advanced Nano Physics			<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics. (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.).</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 6 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p> <p>PSO 7 - To understand the impact of Physics in a global, economic,</p>	<p>CO 1 - To identify how basic Physics can be used to describe the behaviour of electrons in nano – scale materials.</p> <p>CO 2 - To explain the variation in the electron distribution in nanostructures for different dimensions (Quantum well, Quantum wires & quantum dots).</p> <p>CO 3 - To analyze magneto electronics and applications of nanotechnology in various fields.</p> <p>CO 4 - To explain laser effect in quantum well, quantum wires and quantum dots.</p>	
136	PP2046	Elective IV – (c) X-ray Crystallography			<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics. (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.).</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 6 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p> <p>PSO 7 - To understand the impact of Physics in a global, economic,</p>	<p>CO 1 - To understand the sources and diffraction of X-rays.</p> <p>CO 2 - To acquire the basic knowledge on crystal systems and various properties of crystals.</p> <p>CO 3 - To explain the crystallographic data collection tools and intensity measurement method.</p> <p>CO 4 - To analyse the structure factor and intensity of diffracted peaks.</p> <p>CO 5 - To obtain the refined crystal structure by applying mathematical calculations.</p>	
137	PP20P3	Practical III– Advanced Physics Lab – III(Electronics)			<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 6 - To utilize the obtained scientific knowledge to create eco– friendly environment.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics. (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.).</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 6 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p> <p>PSO 7 - To understand the impact of Physics in a global, economic,</p>	<p>CO 1 - To analyse the working of code converters (BCD / Gray, excess 3).</p> <p>CO 2 - To design various synchronous and asynchronous sequential circuits and study their working.</p> <p>CO 3 - To analyse the applications of op – amps (sine, triangular wave generator, low, high and band pass filters).</p> <p>CO 4 - To analyse the behavior of counters (up/down, mod, ring).</p> <p>CO 5 - To analyse the working of electronic circuits (multiplexer, demultiplexer, adder, subtractor).</p>	
138	PP20P4	Practical IV –Advanced Physics Lab – IV (Microprocessor and Micro Controller)			<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 6 - To utilize the obtained scientific knowledge to create eco– friendly environment.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics. (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.).</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 6 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p> <p>PSO 7 - To understand the impact of Physics in a global, economic,</p>	<p>CO 1 - To experiment with assembly language programming on 8085 microprocessor (Addition, Subtraction, Multiplication & Division).</p> <p>CO 2 - To apply assembly language programming on microprocessor (Data Manipulation, square of numbers, counters).</p> <p>CO 3 - To analyse the interfacing of microprocessor 8085 with I/O devices (A/D & D/A, Stepper motor).</p> <p>CO 4 - To apply assembly language programs for 8051 microcontroller.</p>	
139	PP20S2	Self Learning Course: Physics for Lectureship Examination – II			<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics. (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.).</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 6 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p> <p>PSO 7 - To understand the impact of Physics in a global, economic,</p>	<p>CO 1 - To understand the physical construction, working and operational characteristics of semiconductor devices.</p> <p>CO 2 - To attain knowledge on the structure and dynamics of the molecules through various theories.</p> <p>CO 3 - To develop analytical thinking to understand the phenomenon that decide various properties of solids.</p> <p>CO 4 - To know the scientific, environmental and technological applications of nuclear Physics.</p> <p>CO 5 - To study the fundamentals of wave mechanics.</p>	
2021-2022									
140	PC2011	Major Core I - Mechanics	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p>	<p>CO 1 - To understand and define the laws involved in mechanics.</p> <p>CO 2 - To apply conservation laws in collision experiments.</p> <p>CO 3 - To interpret the principles of gravitation and moment of inertia through theory and experiments.</p> <p>CO 4 - To analyze the fundamentals of center of mass and rocket motion.</p> <p>CO 5 - To apply pressure-velocity relation in fluid flow in the field of fluid dynamics.</p> <p>CO 6 - To understand and define the laws involved in mechanics.</p> <p>CO 7 - To apply conservation laws in collision experiments.</p>	
141	AP2011	Allied I- Allied Physics I for Mathematics	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p>	<p>CO 1 - To acquire knowledge on elementary ideas of electricity and magnetism, electronics, optics and nuclear Physics.</p> <p>CO 2 - To analyze the concepts and study their applications in the field of electricity and magnetism, electronics, optics and nuclear Physics.</p> <p>CO 3 - To apply their depth knowledge of Physics in day today life.</p> <p>CO 4 - To analyze the fundamentals of center of mass and rocket motion.</p> <p>CO 5 - To develop their knowledge and carry out the practical by</p>	
142	PNM201	Non Major Elective (NME) – Physics in Everyday Life I	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p>	<p>CO 1 - To understand their knowledge of basic scientific principles and fundamental concepts in Physics.</p> <p>CO 2 - To recall the various phenomena of sound waves applied in day today life.</p> <p>CO 3 - To understand the basic laws of Physics and different forces involved in nature.</p> <p>CO 4 - To explain the Physics concepts behind the sports.</p> <p>CO 5 - To categorize different characteristic nature of light and its properties like refraction, reflection and diffraction.</p>	

143	PC2021	Major Core II – Properties of matter and Sound	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p>	<p>CO 1 - To identify the materials suitable for construction of buildings, based on the moduli of elasticity.</p> <p>CO 2 - To paraphrase the properties of liquids and its determination.</p> <p>CO 3 - To analyze the Physics of sound and its applications.</p> <p>CO 4 - To integrate the concepts of acoustic comfort and better understanding of the theories used in building acoustics.</p>
144	AP2021	Allied II – Allied Physics II for Mathematics	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p>	<p>CO 1 - To acquire knowledge on elementary ideas of electricity and magnetism, electronics, optics and nuclear Physics.</p> <p>CO 2 - To analyze the concepts and study their applications in the field of electricity and magnetism, electronics, optics and nuclear Physics.</p> <p>CO 3 - To apply their depth knowledge of Physics in day today life.</p> <p>CO 4 - To develop their knowledge and carry out the practical by applying these concepts.</p>
145	PNM202	Non Major Elective (NME)- Physics in Every Day Life II	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p>	<p>CO 1 - To understand the principle and working of simple devices used in day to day life.</p> <p>CO 2 - To identify the symbols used for various electronic components and infer the electronic tools.</p> <p>CO 3 - To distinguish different heavenly bodies (star, planet, comets, galaxies).</p> <p>CO 4 - To recall various applications of Physics concepts in everyday life.</p>
146	PC20P1	Major Practical I - Physics Lab I	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects in collaboration with other institution.</p> <p>PO 4 - To equip students with hands on training through various courses to enhance entrepreneurship skills.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p>	<p>CO 1 - To acquire knowledge on elementary ideas of electricity and magnetism, electronics, optics and nuclear Physics.</p> <p>CO 2 - To analyze the concepts and study their applications in the field of electricity and magnetism, electronics, optics and nuclear Physics.</p> <p>CO 3 - To apply their depth knowledge of Physics in day today life.</p> <p>CO 4 - To develop their knowledge and carry out the practical by applying these concepts.</p>
147	AP20P1	Allied Practical – General Physics Lab	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects in collaboration with other institution.</p> <p>PO 7 - To equip students with hands on training through various courses to enhance entrepreneurship skills.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p>	<p>CO 1 - To acquire knowledge on elementary ideas of electricity and magnetism, electronics, optics and nuclear Physics.</p> <p>CO 2 - To analyze the concepts and study their applications in the field of electricity and magnetism, electronics, optics and nuclear Physics.</p> <p>CO 3 - To apply their depth knowledge of elasticity.</p> <p>CO 4 - To develop their knowledge and carry out the practical by applying these concepts.</p>
148	PC2031	Major Core III – Heat and Thermodynamics	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p>	<p>CO 1 - To understand experimental methods to determine the transmission of heat.</p> <p>CO 2 - To analyze the work and heat interactions associated with a prescribed process path and to perform analysis of a flow system.</p> <p>CO 3 - To understand the basic concepts of thermodynamics like system, properties, equilibrium, pressure, specific volume, temperature and the laws of thermodynamics.</p> <p>CO 4 - To evaluate entropy changes in a wide range of processes and determine the reversibility or irreversibility of a process from such calculations.</p>
149	PC2032	Major – Elective - I a) Non Conventional Energy Sources	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects in collaboration with other institution.</p> <p>PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p>	<p>CO 1 - To apply the solar energy in various sectors.</p> <p>CO 2 - To explain the basic principles of wind energy conversion, various biomass conversion processes and its classification.</p> <p>CO 3 - To discuss the geothermal energy resources and chemical energy resources (fuel cells).</p> <p>CO 4 - To solve the present and future energy crisis.</p>
150	PC2033	Major – Elective - I b) Fundamentals of Physics - I	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p>	<p>CO 1 - To understand the fundamentals of dynamics.</p> <p>CO 2 - To determine the behavior of a ray at any optical surface (lenses, Prisms).</p> <p>CO 3 - To outline the extraction of useful energy from earth, ocean, wind and sun.</p> <p>CO 4 - To determine the significance of steady current and alternating current.</p> <p>CO 5 - To apply kirchoff's laws to simple electrical circuits.</p>
151	PC2034	Major – Elective - I c) Microprocessor Fundamentals	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p>	<p>CO 1 - To know the basic ideas on microprocessor, memory and I/O devices.</p> <p>CO 2 - To be familiar with the basic concepts of microprocessor architecture and interfacing.</p> <p>CO 3 - To acquire skills in the programming instruction sets of microprocessors.</p> <p>CO 4 - To apply the programming instructions to perform simple programs using microprocessor.</p> <p>CO 5 - To apply Kirchoff's laws to simple electrical circuits.</p>
152	AP2031	Allied I – Allied Physics I for Chemistry	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p>	<p>CO 1 - To understand various modulus involved in the materials, flow of liquids due to viscous forces, transmission of heat due to process of conduction, convection and radiation and various laws involved in heat transformation, various thermodynamic laws.</p> <p>CO 2 - To analyze the concepts and study the concept of entropy, and the phenomenon like interference and diffraction, optical activity of liquids and its uses.</p> <p>CO 3 - To apply their depth knowledge of Physics in day today life.</p> <p>CO 4 - To develop their knowledge and carry out the practical by</p>

153	PC20S1	Self Learning Course - Physics for Competitive Examination – I	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p> <p>PO 7 - To equip students with hands on training through various courses to enhance</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p>	<p>CO 1 - To recall the principles of mechanics and conservation laws.</p> <p>CO 2 - To understand the concept of fluid dynamics.</p> <p>CO 3 - To categorize different kinds of oscillations.</p> <p>CO 4 - To examine the various aberrations and geometry involved in optics.</p> <p>CO 5 - To apply the laws of thermodynamics on heat phenomena.</p>
154	PC2041	Major Core IV – Optics and Spectroscopy	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p>	<p>CO 1 - To understand the knowledge of geometric optics is helps in the practical design of many optical systems and instruments including aberrations in lens system.</p> <p>CO 2 - To determine the behavior of a ray and wave at any optical surface.</p> <p>CO 3 - To analyze the intensity variation of light due to polarization, interference and diffraction.</p> <p>CO 4 - To study of phenomena interference, diffraction, and polarization lays the foundation for an understanding of concepts such as holograms, interferometers.</p>
155	PC2042	Major – Elective - II a) Computer Programming in C++	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p>	<p>CO 1 - To understand the different types of operators and expressions in C++ language.</p> <p>CO 2 - To implement different operation an arrays and use function to solve the given problem.</p> <p>CO 3 - To understand member functions and constructors.</p> <p>CO 4 - To analyze pointers, operator overloading and inheritance.</p> <p>CO 5 - To analyze input/output operations.</p>
156	PC2043	Major – Elective - II b) Medical Physics	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p>	<p>CO 1 - To understand the Anatomical terms of the body.</p> <p>CO 2 - To explain the physical dynamics of the body.</p> <p>CO 3 - To analyse the heat and pressure system of the body.</p> <p>CO 4 - To discuss the optical and electrical behavior of the human body.</p> <p>CO 5 - To gain knowledge and application ideas regarding diagnostic systems.</p>
157	PC2044	Major – Elective - II c) Optoelectronics	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p>	<p>CO 1 - To explain the various methods of propagation of light waves through various types of fibres.</p> <p>CO 2 - To understand the basic concepts of fiber optics and types of fibers.</p> <p>CO 3 - To explain the structure and performance of LEDs and Lasers.</p> <p>CO 4 - To classify the optical sources and detectors and to discuss their principle.</p> <p>CO 5 - To discuss the channel impairments such as losses and dispersion. CO 6 - To analyse various coupling losses.</p>
158	AP2041	Allied II – Allied Physics II for Chemistry	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects in collaboration with other institution.</p> <p>PO 7 - To equip students with hands on training through various courses to enhance entrepreneurship skills.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p>	<p>CO 1 - To acquire knowledge on elementary ideas of electricity and magnetism, electronics, atomic and nuclear Physics.</p> <p>CO 2 - To analyze the concepts and study their applications in the field of electricity and magnetism, electronics and nuclear Physics.</p> <p>CO 3 - To apply their depth knowledge of Physics in day today life.</p> <p>CO 4 - To develop their knowledge and carry out the practical by applying the concepts of a rectifier, amplifiers and oscillator, basic digital electronics principles through logic gates and the laws governing them.</p>
159	PC20P2	Major Practical II - Physics Lab II	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects in collaboration with other institution.</p> <p>PO 7 - To equip students with hands on training through various courses to enhance entrepreneurship skills.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p>	<p>CO 1 - To understand the scientific method and an ability to apply the scientific method in practice.</p> <p>CO 2 - To recall the basic experiments; improve the basic skills and attitude which help them to apply these skills in their field of Physics.</p> <p>CO 3 - To understand the practical knowledge of various bridges (Desauty's and Owen's bridge) by demonstration of experiments.</p> <p>CO 4 - To verify the Thevenin's and Norton's theorem.</p> <p>CO 5 - To compile a record of an experiment in a clear and logical written form (e.g., lab manual report, Record) augmented with figures and graphs where appropriate.</p> <p>CO 6 - To analyze the physical principle involved in the various</p>
160	AP20P1	Allied Practical – General Physics Lab	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects in collaboration with other institution.</p> <p>PO 7 - To equip students with hands on training through various courses to enhance entrepreneurship skills.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p>	<p>CO 1 - To understand the basic principles of Physics through experiments.</p> <p>CO 2 - To measure and determine the various physical parameters.</p> <p>CO 3 - To develop an idea about the handling of various instruments.</p> <p>CO 4 - To get an idea about basic scientific knowledge and implications of its broad working principle.</p> <p>CO 5 - To analyze, interpret and evaluate data.</p> <p>CO 6 - To build a foundation in scientific career.</p>
161	PC20S2	Self Learning Course: Physics for Competitive Examination – II	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p> <p>PO 7 - To equip students with hands on training through various courses to enhance</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p>	<p>CO 1 - To discuss the principles and generation of electric charges.</p> <p>CO 2 - To classify the different types of magnetic materials.</p> <p>CO 3 - To correlate the mechanisms involved between magnetism and electricity.</p> <p>CO 4 - To discuss the principles behind the phenomena of atomic Physics and nuclear reactions.</p> <p>CO 5 - To apply the laws of thermodynamics on heat phenomena.</p> <p>CO 6 - To differentiate metals, conductors and insulators.</p> <p>CO 7 - To recognize the elements of microprocessors and computers.</p>

162	PC1751	Major Core V - Element of Modern Physics			<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 6 - To communicate appropriately and effectively, in a scientific context using present technology.</p> <p>PSO 7 - To develop entrepreneurial skills, empowered according to the professional requirement and become self-dependent.</p>	<p>CO 1 - To explain the theories and experiment related to particle and wave nature of particles.</p> <p>CO 2 - To identify particle nature experiments (photo electric effect, planks law, Compton effect, photoelectric effect) and wave nature experiments.(Thomson experiment, division germer experiment).</p> <p>CO 3 - To define uncertainty principle.</p> <p>CO 4 - To analyse various models of atomic spectra.</p> <p>CO 5 - To solve schrodinger equation in different dimensional stages.</p> <p>CO 6 - To estimate lorentz transformation for length contraction, time dilation.</p>
163	PC1752	Major Core VI - Optics			<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 6 - To communicate appropriately and effectively, in a scientific context using present technology.</p> <p>PSO 7 - To develop entrepreneurial skills, empowered according to the professional requirement and become self-dependent.</p>	<p>CO 1 - To explain the fundamental principle of optics.</p> <p>CO 2 - To determine the behavior of a ray at any optical surface (lenses, Prisms).</p> <p>CO 3 - To explain the types of waves and its characteristics.</p> <p>CO 4 - To analyze the intensity variation of light due to polarization,interference and diffraction.</p> <p>CO 5 - To distinguish interference, diffraction and polarization.</p> <p>CO 6 - To test the optical planeness of any optical surface.</p> <p>CO 7 - To measure the various optical parameters (focal length, power, refractive index, radius of curvature, dispersive power etc)using optical components (prism, lenses, glass plate, grating).</p> <p>CO 8 - To understand the interference and diffraction from wave optics concepts and know its applications.</p>
164	PC1753	Major Core VII - Solid State Physics			<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 6 - To communicate appropriately and effectively, in a scientific context using present technology.</p> <p>PSO 7 - To develop entrepreneurial skills, empowered according to the professional requirement and become self-dependent.</p>	<p>CO 1 - To illustrate various types of bonding present in solids withexample.</p> <p>CO 2 - To explain the various crystal parameters and structures.</p> <p>CO 3 - To discuss the various theories involved in magnetic materials (dia, para, ferro, ferri and antiferro magnetism)</p> <p>CO 4 - To describe polarization processes and analyze the information contained in the temperature and frequency dependence ofdielectric materials.</p> <p>CO 5 - To analyze the structure and physical properties of semiconductors.</p> <p>CO 6 - To describe and discuss the theory of superconductivity and superconducting materials.</p>
165	PC1754	Major – Elective - III (a) Programming with C++			<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 6 - To communicate appropriately and effectively, in a scientific context using present technology.</p> <p>PSO 7 - To develop entrepreneurial skills, empowered according to the professional requirement and become self-dependent.</p>	<p>CO 1 - To describe the principles of object oriented program. (abstraction, encapsulation, inheritance and polymorphism).</p> <p>CO 2 - To apply object oriented programming techniques to solve computing problems.</p> <p>CO 3 - To develop programs using functions and classes. (objects, array of objects, friend functions, passing and returning objects)</p> <p>CO 4 - To develop programs using constructor, destructor, operator overloading and inheritance.</p> <p>CO 5 - To formulate the applications of pointers and virtual functions.</p> <p>CO 6 - To distinguish formatted and unformatted I/O operations.</p>
166	PC1755	Major – Elective - III (b) Applied Physics			<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 6 - To communicate appropriately and effectively, in a scientific context using present technology.</p> <p>PSO 7 - To develop entrepreneurial skills, empowered according to the professional requirement and become self-dependent.</p>	<p>CO 1 - To understand the general Physics principles of instruments used in the medical field.</p> <p>CO 2 - To explain the use of non ionizing radiation in imaging the body.</p> <p>CO 3 - To outline various features and behavioral activity of the Sun and heavenly bodies of solar system.</p> <p>CO 4 - To discuss the transformation and characteristics of fiber and its manufacturing techniques.</p> <p>CO 5 - To interpret the technique involved in camera, television, etc.</p> <p>CO 6 - To explain the principles, concepts and operation of satellite communication.</p>
167	PC1756	Major – Elective - III (c) Bio Physics	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 6 - To communicate appropriately and effectively, in a scientific context using present technology.</p> <p>PSO 7 - To develop entrepreneurial skills, empowered according to the professional requirement and become self-dependent.</p>	<p>CO 1 - To explain atomic and molecular structure of biomolecules.</p> <p>CO 2 - To interpret the structure of cells and the major components within a cell.</p> <p>CO 3 - To discuss the importance of diffusion, random walks, entropyand self-assembly in biological systems.</p> <p>CO 4 - To illustrate the models of cellular dynamics.</p> <p>CO 5 - To describe stem cell and brain structure; Explain the core concepts of biological literacy. (evolution,biological structure-function relationships, information flow pathways and transformations of energy and matter).</p>
168	PSK175	Skill Based Course - Basic electric circuits and Applications	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 6 - To communicate appropriately and effectively, in a scientific context using present technology.</p> <p>PSO 7 - To develop entrepreneurial skills, empowered according to the professional requirement and become self-dependent.</p>	<p>CO 1 - To recall the basic definitions and units of electrical quantities.</p> <p>CO 2 - To analyze the circuit elements and their connections .</p> <p>CO 3 - To understand various power generation methods.</p> <p>CO 4 - To develop their own circuits using electrical wiring.</p> <p>CO 5 - To compare the Physics concepts behind various electrical instruments and appliances. (Voltmeter, Ammeter, Multimeter, Incandescent lamp, Fluorescent bulb, Choke and Starter, Electric Iron).</p> <p>CO 6 - To demonstrate uses of tester & Multimeter, LDR, Microphone, loudspeaker, etc...</p> <p>CO 7 - To test for the working of electrical circuits and</p>
169	PC1761	Major Core VIII - Mathematical Methods of Physics	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 6 - To communicate appropriately and effectively, in a scientific context using present technology.</p> <p>PSO 7 - To develop entrepreneurial skills, empowered according to the professional requirement and become self-dependent.</p>	<p>CO 1 - To illustrate linear dependence and combination of vectors as quantities in Physics.</p> <p>CO 2 - To evaluate problems in matrices.</p> <p>CO 3 - To solve ordinary and partial differential equations related to Physical Science.</p> <p>CO 4 - To adapt Fourier transform technique to obtain the Fourier series of periodic functions of Physics.</p> <p>CO 5 - To understand and manipulate random variables using the theory of probability including tools of probability transformation and characteristic functions.</p>

170	PC1762	Major Core IX - Digital System and Application			<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 6 - To communicate appropriately and effectively, in a scientific context using present technology.</p> <p>PSO 7 - To develop entrepreneurial skills, empowered according to the professional requirement and become self-dependent.</p>	<p>CO 1 - To understand the fundamental concepts and techniques used in digital electronics.</p> <p>CO 2 - To perform conversions among different number systems and apply in digital designing.</p> <p>CO 3 - To infer the basic logic gates, understand boolean algebra and simplify simple boolean functions by using basic boolean properties.</p> <p>CO 4 - To understand, analyse and design various combinational and sequential circuits. (Flip flop, Counters, MUX, DEMUX, Encoder, Decoder etc.).</p> <p>CO 5 - To understand the architecture and operations of microprocessor 8085.</p> <p>CO 6 - To develop the basic idea about the instruction set and data</p>
171	PC1763	Major Core X - Nuclear Physics			<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 6 - To communicate appropriately and effectively, in a scientific context using present technology.</p> <p>PSO 7 - To develop entrepreneurial skills, empowered according to the professional requirement and become self-dependent.</p>	<p>CO 1 - To define the fundamentals of nuclear matter. (properties of nuclei and nuclear forces).</p> <p>CO 2 - To apply the principles of Physics in the measurements of nuclear size, nuclear spin, nuclear energy levels and nuclear magnetic moment.</p> <p>CO 3 - To assess radioactivity and various nuclear reactions. (nuclear fission and fusion).</p> <p>CO 4 - To explain the decay modes, radiation detectors and particle accelerators. (ionisation chamber, proportional counter, geiger muller counter, linear accelerator, cyclotron, synchro cyclotron, betatron).</p> <p>CO 5 - To discuss the classification of elementary particles and quark model.</p> <p>CO 6 - To analyse the characteristics and behavior of elementary</p>
172	PC1764	Major – Elective - IV (a) Nanomaterials and its applications		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 6 - To communicate appropriately and effectively, in a scientific context using present technology.</p> <p>PSO 7 - To develop entrepreneurial skills, empowered according to the professional requirement and become self-dependent.</p>	<p>CO 1 - To infer the history of nanotechnology and explain the various dimensions of nanostructures.</p> <p>CO 2 - To apply the characterization techniques of nanomaterials. (XRD, SEM, TEM and Analytical Electron Microscope).</p> <p>CO 3 - To explain the synthesis of nanomaterials and categorize their properties.</p> <p>CO 4 - To interpret quantum well, quantum wires and quantum dots.</p> <p>CO 5 - To explain the carbon nanotubes and its applications.</p> <p>CO 6 - To discuss the applications of nanotechnology in various fields.</p>
173	PC1765	Major – Elective - IV (b) Basic AstroPhysics	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 6 - To communicate appropriately and effectively, in a scientific context using present technology.</p> <p>PSO 7 - To develop entrepreneurial skills, empowered according to the professional requirement and become self-dependent.</p>	<p>CO 1 - To identify the historical evolution of sun and planets.</p> <p>CO 2 - To apply the principles of Physics in the measurements of distances, mass, radius, density and luminosity of stars.</p> <p>CO 3 - To compare the resolving power and light gathering power of an astronomical telescope.</p> <p>CO 4 - To explain the physical characteristics of sun and other stars.</p> <p>CO 5 - To analyse the structure of the universe and milky way galaxy.</p> <p>CO 6 - To discuss the observations of Galaxies, dark matter, quasars and pulsars.</p> <p>CO 7 - To develop a deeper understanding of some important</p>
174	PC1766	Major – Elective - IV (c) Digital Signal Processing		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 6 - To communicate appropriately and effectively, in a scientific context using present technology.</p> <p>PSO 7 - To develop entrepreneurial skills, empowered according to the professional requirement and become self-dependent.</p>	<p>CO 1 - To formulate discrete time signals, evaluate their energy and power, check for periodicity and evaluate the period of a signal.</p> <p>CO 2 - To identify properties of discrete time systems. (stability, causality, invertibility).</p> <p>CO 3 - To evaluate discrete-time Fourier transform. (DTFT) of a sequence.</p> <p>CO 4 - To compute the linear and circular convolution of discrete-time sequences.</p> <p>CO 5 - To estimate the z-transform of a sequence, identify its region of convergence and compute the inverse Z-transform.</p> <p>CO 6 - To evaluate the discrete Fourier transform (DFT) of a sequence, relate it to the DTFT and use the DFT to compute the</p>
175	PC17P5	Major Practical V - Physics Lab V	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p> <p>PSO 6 - To communicate appropriately and effectively, in a scientific context using present technology.</p> <p>PSO 7 - To develop entrepreneurial skills, empowered according to the professional requirement and become self-dependent.</p>	<p>CO 1 - To demonstrate the experimental techniques and develop competence in handling optical instruments.</p> <p>CO 2 - To demonstrate an understanding of the scientific method and apply it in practice. (a familiarity with optics).</p> <p>CO 3 - To analyse the diffraction and dispersion phenomena in optical elements (grating or prism) using spectrometer.</p> <p>CO 4 - To measure the various optical parameters (focal length, dispersive power, refractive index, radius of curvature, minimum deviation etc) using optical elements. (prism and grating).</p> <p>CO 5 - To develop practical hands-on experience applying widely used techniques to investigate optical phenomena. (oblique incidence, Normal Incidence, i – d curve, Hyperbolic fringes and Elliptical fringes)</p> <p>CO 6 - To Record, analyze, interpret and critically evaluate</p>
176	PC17P6	Major Practical VI - Physics Lab VI	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p> <p>PSO 6 - To communicate appropriately and effectively, in a scientific context using present technology.</p> <p>PSO 7 - To develop entrepreneurial skills, empowered according to the professional requirement and become self-dependent.</p>	<p>CO 1 - To demonstrate the experimental techniques and develop competence in handling optical instruments.</p> <p>CO 2 - To demonstrate an understanding of the scientific method and apply it in practice. (a familiarity with optics).</p> <p>CO 3 - To analyse the diffraction and dispersion phenomena in optical elements (grating or prism) using spectrometer.</p> <p>CO 4 - To measure the various optical parameters (focal length, dispersive power, refractive index, radius of curvature, minimum deviation etc) using optical elements. (prism and grating)</p> <p>CO 5 - To develop practical hands-on experience applying widely used techniques to investigate optical phenomena. (oblique incidence, Normal Incidence, i – d curve, Hyperbolic fringes and Elliptical fringes).</p> <p>CO 6 - To record, analyze, interpret and critically evaluate</p>

177	PC17P7	Major Practical VII – Physics Lab VII	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p> <p>PSO 6 - To communicate appropriately and effectively, in a scientific context using present technology.</p> <p>PSO 7 - To develop entrepreneurial skills, empowered according to the professional requirement and become self-dependent.</p>	<p>CO 1 - To understand the principles of object oriented program to construct computer programs and modeling of experimental data for the solution of problems in Physics. (period of a pendulum and Young's modulus of a material); Apply object oriented programming techniques to solve computing problems. (addition, subtraction, multiplication and division).</p> <p>CO 2 - To develop programs using functions and classes. (objects, array of objects, friend functions, passing and returning objects,function declaration with/without using the return statement).</p> <p>CO 3 - To formulate the applications of pointers and virtual functions .</p> <p>CO 4 - To distinguish formatted and unformatted I/O operations.</p> <p>CO 5 - To develop programs using constructor, destructor, operator overloading and inheritance. (generate a series of</p>
178	PSK176	SBC -Project	<input type="checkbox"/>	<input type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p> <p>PSO 6 - To communicate appropriately and effectively, in a scientific context using present technology.</p> <p>PSO 7 - To develop entrepreneurial skills, empowered according to the professional requirement and become self-dependent.</p>	<p>CO 1 - To explore new areas of research in Physics.</p> <p>CO 2 - To analyze a research problem and construct tools for data collection.</p> <p>CO 3 - To write research reports and present results in the scientific community.</p> <p>CO 4 - To develop skills to serve in science related industries and agencies.</p> <p>CO 5 - To develop skills to publish articles in reputed journals.</p>
179	PC17S1	Self Learning Course - Physics for Competitive Examination - I	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 6 - To communicate appropriately and effectively, in a scientific context using present technology.</p> <p>PSO 7 - To develop entrepreneurial skills, empowered according to the professional requirement and become self-dependent.</p>	<p>CO 1 - To recall the principles of mechanics and conservation laws;understand the concept of fluid dynamics.</p> <p>CO 2 - To examine the various aberrations and geometry involved in optics.</p> <p>CO 3 - To apply the laws of thermodynamics on heat phenomena.</p>
180	PC17S2	Self Learning Course - Physics for Competitive Examination - II	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 6 - To communicate appropriately and effectively, in a scientific context using present technology.</p> <p>PSO 7 - To develop entrepreneurial skills, empowered according to the professional requirement and become self-dependent.</p>	<p>CO 1 - To recall the principles of mechanics and conservation laws;understand the concept of fluid dynamics.</p> <p>CO 2 - To examine the various aberrations and geometry involved in optics;apply the laws of thermodynamics on heat phenomena.</p>
181	PP2011	Core I – Classical Mechanics	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics. (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.).</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 6 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p> <p>PSO 7 - To understand the impact of Physics in a global, economic,</p>	<p>CO 1 - To understand the basic mechanical concepts related to single andsystem of particles.</p> <p>CO 2 - To apply various mechanical principles to find solution for physicalproblems.</p> <p>CO 3 - To solve the equations of motion using Lagrangian, Hamiltonian andHamilton– Jacobi equations.</p> <p>CO 4 - To explain the origin of coriolis and centrifugal terms in the equation ofmotion in a rotating frame .</p> <p>CO 5 - To understand and develop a scientific knowledge in central force problems and relativity.</p>
182	PP2012	Core II – Mathematical Physics	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics. (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.).</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 6 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p> <p>PSO 7 - To understand the impact of Physics in a global, economic,</p>	<p>CO 1 - To apply the various theorems in complex analysis to evaluate definite integrals.</p> <p>CO 2 - To determine the series solutions and the recurrence relations(Bessel, Legendre and Hermite differential equations) and solve problems associated with them.</p> <p>CO 3 - To discuss the basic principles and methods used for the analysis of partial differential equations and apply the techniques to related problems .</p> <p>CO 4 - To discuss the concepts of Fourier, Laplace and inverse Laplace transform, tensors, group theory and their properties.</p> <p>CO 5 - To develop expertise in mathematical techniques required in Physics and to enhance problem solving skills.</p>
183	PP2013	Core III – Quantum Mechanics– I	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics. (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.).</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 6 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p> <p>PSO 7 - To understand the impact of Physics in a global, economic,</p>	<p>CO 1 - To summarize the concept of wave function and the postulatesof quantum mechanics.</p> <p>CO 2 - To formulate time dependent and time independent equationand solve them for simple potentials.</p> <p>CO 3 - To evaluate the eigen values and eigen function spin and totalangular momenta and determine the matrices.</p> <p>CO 4 - To analyze the principles of quantum theory, equation of motion, scattering theory and angular momentum.</p>

184	PP2014	Elective I – (a) Advanced Nuclear Physics			<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics. (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.).</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 6 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p> <p>PSO 7 - To understand the impact of Physics in a global, economic,</p>	<p>CO 1 - To understand the basic knowledge on nuclei and neutron to know other factors like properties and scattering.</p> <p>CO 2 - To examine the neutron interactions to formulate probability, Diffusion, Fermi- age equations.</p> <p>CO 3 - To analyse the working of nuclear reactors and its reaction to produce nuclear energy.</p> <p>CO 4 - To study the nuclear fusion reaction and apply its principle for stellar energy.</p>
185	PP2015	Elective I – (b) Molecular Physics			<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics. (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.).</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 6 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p> <p>PSO 7 - To understand the impact of Physics in a global, economic,</p>	<p>CO 1 - To understand the chemical bonding of molecules and various theories of homo and hetero nuclear diatomic molecules.</p> <p>CO 2 - To analyze the symmetry operations and molecular orbital theory.</p> <p>CO 3 - To analyse the electronic properties of molecules, Newtonian and Hamiltonian dynamics and Phase space trajectories.</p> <p>CO 4 - To understand the molecular collisions and different energies caused by reactive collisions.</p> <p>CO 5 - To evaluate the transport of electron and the formation of electronic bands and spectra.</p>
186	PP2016	Elective I – (c) Numerical Methods			<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics. (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.).</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 6 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p> <p>PSO 7 - To understand the impact of Physics in a global, economic, environmental, and societal context.</p>	<p>CO 1 - To apply various interpolation methods and finite difference concepts.</p> <p>CO 2 - To analyze the numerical solutions of linear and non linear equations.</p> <p>CO 3 - To utilize various numerical methods for differentiation and integration.</p> <p>CO 4 - To solve ordinary differential equations whenever and wherever routine methods are not applicable.</p>
187	PP2021	Core IV – Electromagnetic Theory			<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics. (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.).</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 6 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p> <p>PSO 7 - To understand the impact of Physics in a global, economic,</p>	<p>CO 1 - To summarize the fundamental laws of electrodynamics based on Maxwell's equations.</p> <p>CO 2 - To enumerate the concept of energy in electrostatic and magnetostatic fields.</p> <p>CO 3 - To illustrate the electrical properties of materials.</p> <p>CO 4 - To solve the wave equation as plane waves in source.</p> <p>CO 5 - To analyze the wave polarization and reflection/transmission of plane waves in homogeneous media.</p>
188	PP2022	Core V – Quantum Mechanics – II		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics. (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.).</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 6 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p> <p>PSO 7 - To understand the impact of Physics in a global, economic,</p>	<p>CO 1 - To enumerate time independent perturbation theory and use approximation methods. (variation principle and WKB method) to solve simple problems (ground state helium, barrier penetration, etc).</p> <p>CO 2 - To analyze time dependent perturbation theory to discuss absorption and emission of radiation for harmonic perturbation.</p> <p>CO 3 - To interpret quantum theory of atomic and molecular structure.</p> <p>CO 4 - To formulate Klein-Gordon and Dirac equations and discuss the applications. (particle in a Coulomb field, Spin of electron).</p>
189	PP2023	Core VI – Condensed Matter Physics – I		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics. (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.).</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 6 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p> <p>PSO 7 - To understand the impact of Physics in a global, economic,</p>	<p>CO 1 - To differentiate between different lattice types and explain the concepts of reciprocal lattice and crystal diffraction.</p> <p>CO 2 - To analyze various crystal imperfections and ordered phases of crystal.</p> <p>CO 3 - To explain the theory of lattice vibrations and analyze the thermal properties of solids.</p> <p>CO 4 - To formulate the problem of electrons in a periodic potential.</p>
190	PP2024	Elective II – (a) Experimental design			<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics. (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.).</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 6 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p> <p>PSO 7 - To understand the impact of Physics in a global, economic,</p>	<p>CO 1 - To understand the principle and working of transducers.</p> <p>CO 2 - To examine the measurement systems and errors in it.</p> <p>CO 3 - To analyse the X ray measurements and to find TEM, SEM, EDS, FESEM, AFM, UV Vis, IR, FTIR characterizations.</p> <p>CO 4 - To get an introduction and idea on optical fibres.</p>

191	PP2025	Elective II – (b) Introductory Astronomy, Astro Physics & Cosmology		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics. (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.).</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 6 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p> <p>PSO 7 - To understand the impact of Physics in a global, economic,</p>	<p>CO 1 - To perceive the historical evolution of solar system and universe.</p> <p>CO 2 - To describe the principles of Physics in the formation of astronomical objects like planets, satellites, asteroids and comets.</p> <p>CO 3 - To gain experience with measurement techniques and equipment and develop the ability to assess certainties and assumptions.</p> <p>CO 4 - To interpret the observations of galaxies, dark matter, quasars and pulsars.</p> <p>CO 5 - To achieve a good understanding of physical laws and principles in cosmology.</p>
192	PP2026	Elective II – (c) Laser Physics		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics. (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.).</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 6 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p> <p>PSO 7 - To understand the impact of Physics in a global, economic,</p>	<p>CO 1 - To develop knowledge in the basics of lasers.</p> <p>CO 2 - To enhance comprehension in the principles of lasers.</p> <p>CO 3 - To analyse the control of laser optetics.</p> <p>CO 4 - To familiarize with the diverse applications of lasers.</p>
193	PP20P1	Practical I – Advanced Physics Lab – I (General Physics)		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 6 - To utilize the obtained scientific knowledge to create eco- friendly environment.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics. (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.).</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 6 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p> <p>PSO 7 - To understand the impact of Physics in a global, economic,</p>	<p>CO 1 - To demonstrate practical skills to work with complex problems and advanced experimental equipment.</p> <p>CO 2 - To develop a practical knowledge in Hall Effect and in determination of Magneto resistance.</p> <p>CO 3 - To develop practical experience in LASER experiments.</p> <p>CO 4 - To measure and compare the dielectric constant of various liquids.</p> <p>CO 5 - To apply Ultrasonic Interferometers to determine the velocity of sound.</p>
194	PP20P2	Practical II – Advanced Physics Lab – II (Programming with C++)		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 6 - To utilize the obtained scientific knowledge to create eco- friendly environment.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics. (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.).</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 6 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p> <p>PSO 7 - To understand the impact of Physics in a global, economic,</p>	<p>CO 1 - To understand the basic concept of Object Oriented Programming (OOP).</p> <p>CO 2 - To interpret the theoretical formulation for physical phenomena and apply experimental numerical.</p> <p>CO 3 - To simulations methods to find the solution.</p> <p>CO 4 - To apply computational methods and numerical algorithms to problems in advanced Physics using C++ programming.</p> <p>CO 5 - To develop a basic knowledge in high level programming languages.</p>
195	PP2031	Core VII – Electronics	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics. (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.).</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 6 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p> <p>PSO 7 - To understand the impact of Physics in a global, economic,</p>	<p>CO 1 - To understand the basic operation, and features related to diodes, transistor, op- amps, converter and interpret.</p> <p>CO 2 - To explain about the internal circuitry and logic behind semiconductor memory devices.</p> <p>CO 3 - To assess the working of diodes, transistor, op- amps and converters.</p> <p>CO 4 - To design various filter circuits.</p>
196	PP2032	Core VIII – Condensed Matter Physics – II		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics. (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.).</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 6 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p> <p>PSO 7 - To understand the impact of Physics in a global, economic,</p>	<p>CO 1 - To understand the theory of dielectrics and analyze the dielectric properties of materials.</p> <p>CO 2 - To explain various types of magnetic phenomenon and their properties and applications.</p> <p>CO 3 - To elaborate the properties and applications.</p> <p>CO 4 - To apply the obtained concepts to challenges.</p>
197	PP20PR	Research Project	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics. (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.).</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 6 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p> <p>PSO 7 - To understand the impact of Physics in a global, economic,</p>	<p>CO 1 - To explore new areas of research in Physics.</p> <p>CO 2 - To analyze a research problem and construct tools for data collection.</p> <p>CO 3 - To write research reports and present results in the scientific community.</p> <p>CO 4 - To develop skills to serve in science related industries and agencies.</p> <p>CO 5 - To develop skills to publish articles in reputed journals.</p>

198	PP2033	Elective III – (a) BioPhysics		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics. (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.).</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 6 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p> <p>PSO 7 - To understand the impact of Physics in a global, economic,</p>	<p>CO 1 - To understand the basic structural unit and its different types.</p> <p>CO 2 - To acquire the basic knowledge on various microscopes used to analyse the cell structure.</p> <p>CO 3 - To analyse the structure of DNA, RNA and proteins.</p> <p>CO 4 - To explain the techniques used to separate the biomolecules.</p> <p>CO 5 - To determine the interaction of molecules by using different optical and diffraction techniques.</p>
199	PP2034	Elective III – (b) Microprocessor and Microcontroller		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics. (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.).</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 6 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p> <p>PSO 7 - To understand the impact of Physics in a global, economic,</p>	<p>CO 1 - To identify the operation of various components of the microprocessor 8085 and microprocessor 8086.</p> <p>CO 2 - To relate and explain the various addressing modes and the instruction set of 8085 microprocessor.</p> <p>CO 3 - To develop skill in writing simple programs for 8085 microprocessor.</p> <p>CO 4 - To explain the architecture of 8051 microcontroller.</p> <p>CO 5 - To understand the various interrupts of 8085 microprocessor.</p>
200	PP2035	Elective III – (c) Solar Energy Utilization		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p> <p>PO 6 - To utilize the obtained scientific knowledge to create eco- friendly environment.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics. (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.).</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 6 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p> <p>PSO 7 - To understand the impact of Physics in a global, economic,</p>	<p>CO 1 - To understand the basic concept of heat transfer.</p> <p>CO 2 - To design the solar collectors and solve the optical loss.</p> <p>CO 3 - To relate the different types of solar water heaters.</p> <p>CO 4 - To analyze the use of nanostructures and nanomaterials in fuel cell technology.</p> <p>CO 5 - To evaluate the photo voltaic principles and compare the types of solar cells.</p>
201	PP20S1	Self Learning Course: Physics for Lectureship Examination – I		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics. (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.).</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 6 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p> <p>PSO 7 - To understand the impact of Physics in a global, economic,</p>	<p>CO 1 - To familiarize with a range of mathematical methods that are essential for solving advanced problems in theoretical Physics.</p> <p>CO 2 - To model mechanical systems, both in inertial and rotating frames, using lagrange and hamilton equations.</p> <p>CO 3 - To gain insight into the physical nature of electric and magnetic phenomena.</p> <p>CO 4 - To use quantum mechanical principles to analyze advanced physical phenomena of nature.</p> <p>CO 5 - To understand the theory and methods of statistical Physics and thermodynamics.</p>
202	PP2041	Core IX – Nuclear and Elementary Particle Physics		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics. (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.).</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 6 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p> <p>PSO 7 - To understand the impact of Physics in a global, economic,</p>	<p>CO 1 - To understand the properties of nuclear forces and outline their behavioral formulation.</p> <p>CO 2 - To analyze the different nuclear models of the nucleus and examine the application of the shell model of nucleus.</p> <p>CO 3 - To explain the characteristics and effect of radioactive decay phenomena (alpha,beta,gamma)Discuss the outcome of various types of nuclear reactions.</p> <p>CO 4 - To examine the particle Physics phenomena and their basic theoretical description.</p>
203	PP2042	Core X – Spectroscopy		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics. (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.).</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 6 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p> <p>PSO 7 - To understand the impact of Physics in a global, economic,</p>	<p>CO 1 - To apply basic spectroscopic techniques. (Microwave, IR,Raman and NMR).</p> <p>CO 2 - To understand the molecular interactions in different spectroscopic methods.</p> <p>CO 3 - To analyze the characteristics of rotational spectra and vibrational energy of molecules.</p> <p>CO 4 - To utilize various spectroscopic methods suitable for characterizing molecules.</p>
204	PP2043	Core XI –Thermodynamics and Statistical Mechanics		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics. (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.).</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 6 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p> <p>PSO 7 - To understand the impact of Physics in a global, economic,</p>	<p>CO 1 - To understand the basic concepts related to thermodynamics,microstates and macrostates .</p> <p>CO 2 - To apply principles to find relation between grand canonical and canonical partition functions.</p> <p>CO 3 - To solve the boltzmann distributions bose- einstein, fermi- dirac and maxwell.</p> <p>CO 4 - To analyze the origin of transport and non- equilibrium processes.</p> <p>CO 5 - To understand the concept of heat capacities and phasetransitions.</p>

205	PP2044	Elective IV – (a) Materials Physics and Processing Techniques			<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics. (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.).</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 6 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p> <p>PSO 7 - To understand the impact of Physics in a global, economic,</p>	<p>CO 1 - To remember basic principles in material Physics.</p> <p>CO 2 - To understand various material fabrication methods.</p> <p>CO 3 - To analyze different characterization used for materials processing.</p> <p>CO 4 - To apply different methods of material processing.</p> <p>CO 5 - To evaluate the materials and characterization tools.</p>	
206	PP2045	Elective IV – (b) Advanced Nano Physics			<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics. (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.).</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 6 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p> <p>PSO 7 - To understand the impact of Physics in a global, economic,</p>	<p>CO 1 - To identify how basic Physics can be used to describe the behaviour of electrons in nano- scale materials.</p> <p>CO 2 - To explain the variation in the electron distribution in nanostructures for different dimensions (quantum well, quantum wires & quantum dots).</p> <p>CO 3 - To analyze magneto electronics and applications of nanotechnology in various fields.</p> <p>CO 4 - To explain laser effect in quantum well, quantum wires and quantum dots.</p>	
207	PP2046	Elective IV – (c) X-ray Crystallography			<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics. (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.).</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 6 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p> <p>PSO 7 - To understand the impact of Physics in a global, economic,</p>	<p>CO 1 - To understand the sources and diffraction of X- rays.</p> <p>CO 2 - To acquire the basic knowledge on crystal systems and various properties of crystals.</p> <p>CO 3 - To explain the crystallographic data collection tools and intensity measurement method.</p> <p>CO 4 - To analyse the structure factor and intensity of diffracted peaks.</p> <p>CO 5 - To obtain the refined crystal structure by applying mathematical calculations.</p>	
208	PP20P3	Practical III – Advanced Physics Lab – III (Electronics)			<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 6 - To utilize the obtained scientific knowledge to create eco- friendly environment.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics. (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.).</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 6 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p> <p>PSO 7 - To understand the impact of Physics in a global, economic,</p>	<p>CO 1 - To analyse the working of code converters (BCD / gray, excess 3).</p> <p>CO 2 - To design various synchronous and asynchronous sequential circuits and study their working.</p> <p>CO 3 - To analyse the applications of op- amps (sine, triangular wavegenerator, low, high and band pass filters).</p> <p>CO 4 - To analyse the behavior of counters (up/down, mod, ring).</p> <p>CO 5 - To analyse the working of electronic circuits (multiplexer, demultiplexer, adder, subtractor).</p>	
209	PP20P4	Practical IV – Advanced Physics Lab – IV (Microprocessor and Micro Controller)			<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 6 - To utilize the obtained scientific knowledge to create eco- friendly environment.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics. (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.).</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 6 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p> <p>PSO 7 - To understand the impact of Physics in a global, economic,</p>	<p>CO 1 - To experiment with assembly language programming on 8085 microprocessor (addition, subtraction, multiplication & division).</p> <p>CO 2 - To apply assembly language programming on microprocessor (data manipulation, square of numbers, counters).</p> <p>CO 3 - To analyse the interfacing of microprocessor 8085 with I/O devices (A/D & D/A, stepper motor).</p> <p>CO 4 - To apply assembly language programs for 8051 microcontroller.</p>	
210	PP20S2	Self Learning Course: Physics for Lecturership Examination – II			<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics. (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.).</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 6 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p> <p>PSO 7 - To understand the impact of Physics in a global, economic,</p>	<p>CO 1 - To understand the physical construction, working and operational characteristics of semiconductor devices.</p> <p>CO 2 - To attain knowledge on the structure and dynamics of the molecules through various theories.</p> <p>CO 3 - To develop analytical thinking to understand the phenomenon that decide various properties of solids.</p> <p>CO 4 - To know the scientific, environmental and technological applications of nuclear Physics.</p> <p>CO 5 - To study the fundamentals of wave mechanics.</p>	
2020-2021									
211	PC2011	Major Core I - Mechanics	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p>	<p>CO 1 - To understand and define the laws involved in mechanics.</p> <p>CO 2 - To apply conservation laws in collision experiments.</p> <p>CO 3 - To interpret the principles of gravitation and moment of inertia through theory and experiments.</p> <p>CO 4 - To analyze the fundamentals of center of mass and rocket motion.</p> <p>CO 5 - To apply pressure velocity relation in fluid flow in the field of fluid dynamics.</p> <p>CO 6 - To understand and define the laws involved in mechanics.</p> <p>CO 7 - To apply conservation laws in collision experiments.</p>	
212	AP2011	Allied I- Allied Physics I for Mathematics	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p>	<p>CO 1 - To acquire knowledge on elementary ideas of electricity and magnetism, electronics, optics and nuclear Physics.</p> <p>CO 2 - To analyze the concepts and study their applications in the field of electricity and magnetism, electronics, optics and nuclear Physics.</p> <p>CO 3 - To apply their depth knowledge of Physics in day today life.</p> <p>CO 4 - To analyze the fundamentals of center of mass and rocket motion.</p> <p>CO 5 - To develop their knowledge and carry out the practical by</p>	

213	PNM201	Non Major Elective (NME) – Physics in Everyday Life I		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p>	<p>CO 1 - To understand their knowledge of basic scientific principles and fundamental concepts in Physics.</p> <p>CO 2 - To recall the various phenomena of sound waves applied in day today life.</p> <p>CO 3 - To understand the basic laws of Physics and different forces involved in nature.</p> <p>CO 4 - To explain the Physics concepts behind the sports.</p> <p>CO 5 - To categorize different characteristic nature of light and its properties like refraction, reflection and diffraction.</p>
214	PC2021	Major Core II – Properties of matter and Sound	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p>	<p>CO 1 - To identify the materials suitable for construction of buildings, based on the moduli of elasticity.</p> <p>CO 2 - To paraphrase the properties of liquids and its determination.</p> <p>CO 3 - To analyze the Physics of sound and its applications.</p> <p>CO 4 - To integrate the concepts of acoustic comfort and better understanding of the theories used in building acoustics.</p>
215	AP2021	Allied II – Allied Physics II for Mathematics	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p>	<p>CO 1 - To acquire knowledge on elementary ideas of electricity and magnetism, electronics, optics and nuclear Physics.</p> <p>CO 2 - To analyze the concepts and study their applications in the field of electricity and magnetism, electronics, optics and nuclear Physics.</p> <p>CO 3 - To apply their depth knowledge of Physics in day today life.</p> <p>CO 4 - To develop their knowledge and carry out the practical by applying these concepts.</p>
216	PNM202	Non Major Elective (NME)- Physics in Every Day Life II		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p>	<p>CO 1 - To understand the principle and working of simple devices used in day to day life.</p> <p>CO 2 - To identify the symbols used for various electronic components and infer the electronic tools.</p> <p>CO 3 - To distinguish different heavenly bodies (star,planet,comets, galaxies).</p> <p>CO 4 - To recall various applications of Physics concepts in everyday life.</p>
217	PC20P1	Major Practical I - Physics Lab I	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects in collaboration with other institution.</p> <p>PO 4 - To equip students with hands on training through various courses to enhance entrepreneurship skills.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p>	<p>CO 1 - To acquire knowledge on elementary ideas of electricity and magnetism, electronics, optics and nuclear Physics.</p> <p>CO 2 - To analyze the concepts and study their applications in the field of electricity and magnetism, electronics, optics and nuclear Physics.</p> <p>CO 3 - To apply their depth knowledge of Physics in day today life.</p> <p>CO 4 - To develop their knowledge and carry out the practical by applying these concepts.</p>
218	AP20P1	Allied Practical – General Physics Lab		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects in collaboration with other institution.</p> <p>PO 7 - To equip students with hands on training through various courses to enhance entrepreneurship skills.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p>	<p>CO 1 - To acquire knowledge on elementary ideas of electricity and magnetism, electronics, optics and nuclear Physics.</p> <p>CO 2 - To analyze the concepts and study their applications in the field of electricity and magnetism, electronics, optics and nuclear Physics.</p> <p>CO 3 - To apply their depth knowledge of Physics in day today life.</p> <p>CO 4 - To develop their knowledge and carry out the practical by applying these concepts.</p>
219	PC1731	Major Core III – Electricity and Magnetism	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 6 - To communicate appropriately and effectively, in a scientific context using present technology.</p> <p>PSO 7 - To develop entrepreneurial skills, empowered according to the professional requirement and become self-dependent.</p>	<p>CO 1 - To explain the concept and features of the electrostatic force (coulomb force), magnetic field, flux, force, the electric force field, gauss's Law and its application (charged sphere, cylinder, plane sheet).</p> <p>CO 2 - To analyse the presence of electric potential and potential difference, within a framework of distributed symmetric charge distributions.</p> <p>CO 3 - To understand the laws of electromagnetic induction as applied to self and mutual induction.</p> <p>CO 4 - To analyse AC circuit behavior. (LR,CR and LCR).</p> <p>CO 5 - To apply kirchoff's laws and network theorems to electrical circuits.</p>
220	PC1732	Major – Elective - I (a) Non – Conventional Energy Sources	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 6 - To communicate appropriately and effectively, in a scientific context using present technology.</p> <p>PSO 7 - To develop entrepreneurial skills, empowered according to the professional requirement and become self-dependent.</p>	<p>CO 1 - To understand the utilization of solar energy for generating the power.</p> <p>CO 2 - To apply the solar energy in various sectors.</p> <p>CO 3 - To explain the basic principles of wind energy conversion, its components and its classification.</p> <p>CO 4 - To explain the various biomass conversion Processes.</p> <p>CO 5 - To discuss the geothermal energy resources and chemical energy resources.</p> <p>CO 6 - To outline the extraction of useful energy from earth, ocean, wind and sun.</p> <p>CO 7 - To design the various pollution-free energy resources.(solar heater, solar cooker, wind mill etc).</p>
221	PC1733	Major – Elective - I (b) Medical Physics	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 6 - To communicate appropriately and effectively, in a scientific context using present technology.</p> <p>PSO 7 - To develop entrepreneurial skills, empowered according to the professional requirement and become self-dependent.</p>	<p>CO 1 - To understand the anatomical terms of the body.</p> <p>CO 2 - To explain the physical dynamics of the body.</p> <p>CO 3 - To analyse the heat and pressure system of the body.</p> <p>CO 4 - To discuss the optical, electrical and acoustical behavior of the human body.</p> <p>CO 5 - To gain knowledge and application ideas regarding radiations and diagnostic systems.</p> <p>CO 6 - To identify the radiation units and will be able to measure the radiation dose.</p>

222	PC1734	Major – Elective - I (c) Physics of Earth	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 6 - To communicate appropriately and effectively, in a scientific context using present technology.</p> <p>PSO 7 - To develop entrepreneurial skills, empowered according to the professional requirement and become self-dependent.</p>	<p>CO 1 - To understand the scientific ideas of how the universe formed and how it is expanding.</p> <p>CO 2 - To discuss the general characteristics and origin of universe.</p> <p>CO 3 - To explain the physical dimensions and the internal structure of the earth.</p> <p>CO 4 - To discuss the various regions in earth (hydrosphere, atmosphere, cryosphere and bio-sphere).</p> <p>CO 5 - To explain the dynamical processes that happen in earth.</p> <p>CO 6 - To analyse the earth's temperature change processes at local to global scales.</p> <p>CO 7 - To discuss the evolution of life on earth and its role in</p>
223	PC17P3	Major Practical III - Physics Lab III	<input checked="" type="checkbox"/>			<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p> <p>PSO 6 - To communicate appropriately and effectively, in a scientific context using present technology.</p> <p>PSO 7 - To develop entrepreneurial skills, empowered according to the professional requirement and become self-dependent.</p>	<p>CO 1 - To understand the scientific method and an ability to apply the scientific method in practice.</p> <p>CO 2 - To understand the theory of ballistic galvanometer by doing experiments.</p> <p>CO 3 - To recall the basic experiments.</p> <p>CO 4 - To improve the basic skills and attitude which help them to apply these skills in their field of Physics.</p> <p>CO 5 - To understand the practical knowledge of various bridges (desauty's and owen's bridge) by demonstration of experiments.</p> <p>CO 6 - To determine the resonant frequency and Q value of a series and parallel LCR circuit and be able to verify thethevinin and nortons theorem.</p> <p>CO 7 - To compile a record of an experiment in a clear and logical written form (e.g., lab manual report, Record) augmented with</p>
224	AP1731	Allied II – Allied Physics - I (for II B.Sc Chemistry)	<input checked="" type="checkbox"/>			<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p> <p>PSO 6 - To communicate appropriately and effectively, in a scientific context using present technology.</p> <p>PSO 7 - To develop entrepreneurial skills, empowered according to the professional requirement and become self-dependent.</p>	<p>CO 1 - To interpret simple systems undergoing simple harmonic motion and derive equations of motion.</p> <p>CO 2 - To demonstrate the bending moment diagrams (distinguish different type of bending).</p> <p>CO 3 - To explain the properties and behavior of fluids undervarious conditions.</p> <p>CO 4 - To distinguish between the characteristics and features of various phenomena of light, (interference, diffraction, polarization, double refraction, specific rotation).</p> <p>CO 5 - To analyze and study the applications of dispersion and refraction through a prism.</p>
225	PC1741	Major Core IV – Analog System and Application	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 6 - To communicate appropriately and effectively, in a scientific context using present technology.</p> <p>PSO 7 - To develop entrepreneurial skills, empowered according to the professional requirement and become self-dependent.</p>	<p>CO 1 - To understand the basics of semiconductor physics for intrinsic and extrinsic materials.</p> <p>CO 2 - To examine the operation, features and parameters related to diodes, transistor, and interpret their applications. (P-N diode, zener diode, transistor).</p> <p>CO 3 - To justify the function of semiconductor diodes in filter and bridge circuits.</p> <p>CO 4 - To design amplifier circuits with and without feedback.</p> <p>CO 5 - To analyse the different types of oscillators based on their circuit design LC,RC,RC phase shift, Wien bridge, crystal.</p> <p>CO 6 - To analyse the characteristics and various applications of the op-amp.</p>
226	PC1742	Major – Elective - II (a) Fibre Optics	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 6 - To communicate appropriately and effectively, in a scientific context using present technology.</p> <p>PSO 7 - To develop entrepreneurial skills, empowered according to the professional requirement and become self-dependent.</p>	<p>CO 1 - To explain the various methods of propagation of light waves through various types of fibres.</p> <p>CO 2 - To explain the structure and performance of LEEDS and lasers.</p> <p>CO 3 - To classify the optical sources and detectors and to discuss their principle.</p> <p>CO 4 - To discuss the channel impairments such as losses and dispersion and analyse various coupling losses.</p> <p>CO 5 - To understand and compare operation, principles, characteristics, design architecture of modulators and detectors of light.</p>
227	PC1743	Major – Elective - II (b) Microprocessor	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 6 - To communicate appropriately and effectively, in a scientific context using present technology.</p> <p>PSO 7 - To develop entrepreneurial skills, empowered according to the professional requirement and become self-dependent.</p>	<p>CO 1 - To explain the architecture of 8085 microprocessor.</p> <p>CO 2 - To analyze the instruction set of 8085 microprocessor.</p> <p>CO 3 - To develop skill in writing simple programs for 8085 microprocessor.</p> <p>CO 4 - To examine the programming techniques with additional instructions.</p> <p>CO 5 - To analyze the 8085 microprocessor applications. (counters and generation of waves forms).</p>
228	PC1744	Major – Elective - II (c) Communication System	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 6 - To communicate appropriately and effectively, in a scientific context using present technology.</p> <p>PSO 7 - To develop entrepreneurial skills, empowered according to the professional requirement and become self-dependent.</p>	<p>CO 1 - To understand the basic ideas regarding modulation in communication system.</p> <p>CO 2 - To understand the frequency and pulse modulation and explain its detection.</p> <p>CO 3 - To identify and apply appropriate techniques, resources and to solve problems in mobile communication system.</p> <p>CO 4 - To develop the ideas in satellite communication.</p> <p>CO 5 - To apply the technical skills and modern tools in electronic communication systems.</p>
229	PC17P4	Major Practical IV - Physics Lab IV	<input checked="" type="checkbox"/>			<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p> <p>PSO 6 - To communicate appropriately and effectively, in a scientific context using present technology.</p> <p>PSO 7 - To develop entrepreneurial skills, empowered according to the professional requirement and become self-dependent.</p>	<p>CO 1 - To develop the basic experiments.</p> <p>CO 2 - To improve basic skills and attitude which help them to apply these skills in their field of Physics.</p> <p>CO 3 - To understand the principle and working of analog electronic circuits (zener diode, bridge rectifier) through some basic experiments.</p> <p>CO 4 - To analyze the physical principle involved in the various instruments and design simple circuits for amplifiers (single stage CE amplifier with and without feedback).</p> <p>CO 5 - To construct simple circuits containing operational amplifiers such as adder and subtractor, differentiator and integrator.</p> <p>CO 6 - To apply conceptual understanding of the Physics to general real-world situations.</p>

230	AP17P3	Allied Practical – General Physics Lab	<input checked="" type="checkbox"/>				<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p> <p>PSO 6 - To communicate appropriately and effectively, in a scientific context using present technology.</p> <p>PSO 7 - To develop entrepreneurial skills, empowered according to the professional requirement and become self-dependent.</p>	<p>CO 1 - To demonstrate the phenomena of thermal conductivity in good and bad conductor. (forbe's method, Lee's discmethod).</p> <p>CO 2 - To apply the laws of transverse vibration and estimate the frequency of A.C mains using sonometer.</p> <p>CO 3 - To interpret the principle involved in the formation of lissajous figures using oscillators.</p> <p>CO 4 - To understand the concept and characteristics of sound through experiments.</p> <p>CO 5 - To organize and present the performed experiments in graphical format.</p>
231	AP1741	Allied II – Allied Physics - II (for II B.Sc Chemistry)	<input checked="" type="checkbox"/>				<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 6 - To communicate appropriately and effectively, in a scientific context using present technology.</p> <p>PSO 7 - To develop entrepreneurial skills, empowered according to the professional requirement and become self-dependent.</p>	<p>CO 1 - To demonstrate the phenomena of thermal conductivity in good and bad conductor. (Forbe's method, Lee's discmethod).</p> <p>CO 2 - To apply the laws of transverse vibration and estimate the frequency of A.C mains using sonometer.</p> <p>CO 3 - To interpret the principle involved in the formation of Lissajous figures using oscillators.</p> <p>CO 4 - To understand the concept and characteristics of sound through experiments.</p> <p>CO 5 - To organize and present the performed experiments in graphical format.</p>
232	PC1751	Major Core V - Element of Modern Physics		<input checked="" type="checkbox"/>			<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 6 - To communicate appropriately and effectively, in a scientific context using present technology.</p> <p>PSO 7 - To develop entrepreneurial skills, empowered according to the professional requirement and become self-dependent.</p>	<p>CO 1 - To explain the theories and experiment related to particle and wave nature of particles.</p> <p>CO 2 - To identify particle nature experiments (photo electric effect, planks law, compton effect, photoelectric effect) and wave nature experiments. (thomson experiment, division germer experiment).</p> <p>CO 3 - To define uncertainty principle.</p> <p>CO 4 - To analyse various models of atomic spectra.</p> <p>CO 5 - To solve schrodinger equation in different dimensional stages.</p> <p>CO 6 - To estimate lorentz transformation for length contraction, time dilation.</p>
233	PC1752	Major Core VI - Optics	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 6 - To communicate appropriately and effectively, in a scientific context using present technology.</p> <p>PSO 7 - To develop entrepreneurial skills, empowered according to the professional requirement and become self-dependent.</p>	<p>CO 1 - To explain the fundamental principle of optics.</p> <p>CO 2 - To determine the behavior of a ray at any optical surface (lenses, Prisms).</p> <p>CO 3 - To explain the types of waves and its characteristics.</p> <p>CO 4 - To analyze the intensity variation of light due to polarization, interference and diffraction.</p> <p>CO 5 - To distinguish interference, diffraction and polarization.</p> <p>CO 6 - To test the optical planeness of any optical surface.</p> <p>CO 7 - To measure the various optical parameters. (focal length, power, refractive index, radius of curvature, dispersive power) using optical components (prism, lenses, glass plate, grating).</p> <p>CO 8 - To understand the interference and diffraction from wave optics concepts and know its applications.</p>
234	PC1753	Major Core VII - Solid State Physics		<input checked="" type="checkbox"/>			<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 6 - To communicate appropriately and effectively, in a scientific context using present technology.</p> <p>PSO 7 - To develop entrepreneurial skills, empowered according to the professional requirement and become self-dependent.</p>	<p>CO 1 - To illustrate various types of bonding present in solids with example.</p> <p>CO 2 - To explain the various crystal parameters and structures.</p> <p>CO 3 - To discuss the various theories involved in magnetic materials (dia, para, ferro, ferri and antiferro magnetism).</p> <p>CO 4 - To describe polarization processes and analyze the information contained in the temperature and frequency dependence of dielectric materials.</p> <p>CO 5 - To analyze the structure and physical properties of semiconductors.</p> <p>CO 6 - To describe and discuss the theory of superconductivity and superconducting materials.</p>
235	PC1754	Major – Elective - III (a) Programming with C++		<input checked="" type="checkbox"/>			<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 6 - To communicate appropriately and effectively, in a scientific context using present technology.</p> <p>PSO 7 - To develop entrepreneurial skills, empowered according to the professional requirement and become self-dependent.</p>	<p>CO 1 - To describe the principles of object oriented program.</p> <p>CO 2 - To apply object oriented programming techniques to solve computing problems.</p> <p>CO 3 - To develop programs using functions and classes.</p> <p>CO 4 - To develop programs using constructor, destructor, operator overloading and inheritance.</p> <p>CO 5 - To formulate the applications of pointers and virtual functions.</p> <p>CO 6 - To distinguish formatted and unformatted I/O operations.</p>
236	PC1755	Major – Elective - III (b) Applied Physics		<input checked="" type="checkbox"/>			<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 6 - To communicate appropriately and effectively, in a scientific context using present technology.</p> <p>PSO 7 - To develop entrepreneurial skills, empowered according to the professional requirement and become self-dependent.</p>	<p>CO 1 - To understand the general Physics principles of instruments used in the medical field.</p> <p>CO 2 - To explain the use of non ionizing radiation in imaging the body.</p> <p>CO 3 - To outline various features and behavioral activity of the sun and heavenly bodies of solar system.</p> <p>CO 4 - To discuss the transformation and characteristics of fiber and its manufacturing techniques.</p> <p>CO 5 - To interpret the technique involved in camera, television, etc.</p> <p>CO 6 - To explain the principles, concepts and operation of satellite communication.</p>
237	PC1756	Major – Elective - III (c) Bio Physics	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 6 - To communicate appropriately and effectively, in a scientific context using present technology.</p> <p>PSO 7 - To develop entrepreneurial skills, empowered according to the professional requirement and become self-dependent.</p>	<p>CO 1 - To explain atomic and molecular structure of biomolecules.</p> <p>CO 2 - To interpret the structure of cells and the major components within a cell.</p> <p>CO 3 - To discuss the importance of diffusion, random walks, entropy and self-assembly in biological systems.</p> <p>CO 4 - To illustrate the models of cellular dynamics.</p> <p>CO 5 - To describe stem cell and brain structure; Explain the core concepts of biological literacy. (evolution, biological structure-function relationships, information flow pathways and transformations of energy and matter).</p>

238	PSK175	Skill Based Course – Basic electric circuits and Applications	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 6 - To communicate appropriately and effectively, in a scientific context using present technology.</p> <p>PSO 7 - To develop entrepreneurial skills, empowered according to the professional requirement and become self-dependent.</p>	<p>CO 1 - To recall the basic definitions and units of electrical quantities.</p> <p>CO 2 - To analyze the circuit elements and their connections.</p> <p>CO 3 - To understand various power generation methods.</p> <p>CO 4 - To develop their own circuits using electrical wiring.</p> <p>CO 5 - To compare the Physics concepts behind various electrical instruments and appliances. (Voltmeter, Ammeter, Multimeter, Incandescent lamp, Fluorescent bulb, Choke and Starter, Electric Iron).</p> <p>CO 6 - To demonstrate uses of tester & multimeter, LDR, microphone, loudspeaker, etc.</p> <p>CO 7 - To test for the working of electrical circuits and appliances</p>
239	PC1761	Major Core VIII – Mathematical Methods of Physics	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 6 - To communicate appropriately and effectively, in a scientific context using present technology.</p> <p>PSO 7 - To develop entrepreneurial skills, empowered according to the professional requirement and become self-dependent.</p>	<p>CO 1 - To illustrate linear dependence and combination of vectors as quantities in Physics.</p> <p>CO 2 - To evaluate problems in matrices.</p> <p>CO 3 - To solve ordinary and partial differential equations related to physical science.</p> <p>CO 4 - To adapt fourier transform technique to obtain the fourier series of periodic functions of Physics.</p> <p>CO 5 - To understand and manipulate random variables using the theory of probability including tools of probability transformation and characteristic functions.</p>
240	PC1762	Major Core IX - Digital System and Application	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 6 - To communicate appropriately and effectively, in a scientific context using present technology.</p> <p>PSO 7 - To develop entrepreneurial skills, empowered according to the professional requirement and become self-dependent.</p>	<p>CO 1 - To understand the fundamental concepts and techniques used in digital electronics.</p> <p>CO 2 - To perform conversions among different number systems and apply in digital designing.</p> <p>CO 3 - To infer the basic logic gates, understand boolean algebra and simplify simple boolean functions by using basic boolean properties.</p> <p>CO 4 - To understand, analyse and design various combinational and sequential circuits (Flip flop, counters, MUX, DEMUX, encoder, decoder etc.)</p> <p>CO 5 - To understand the architecture and operations of microprocessor 8085.</p>
241	PC1763	Major Core X - Nuclear Physics	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 6 - To communicate appropriately and effectively, in a scientific context using present technology.</p> <p>PSO 7 - To develop entrepreneurial skills, empowered according to the professional requirement and become self-dependent.</p>	<p>CO 1 - To define the fundamentals of nuclear matter. (properties of nuclei and nuclear forces).</p> <p>CO 2 - To apply the principles of Physics in the measurements of nuclear size, nuclear spin, nuclear energy levels and nuclear magnetic moment.</p> <p>CO 3 - To assess radioactivity and various nuclear reactions. (nuclear fission and fusion).</p> <p>CO 4 - To explain the decay modes, radiation detectors and particle accelerators. (ionisation chamber, proportional counter, geiger muller counter, linear accelerator, cyclotron, synchro cyclotron, betatron).</p> <p>CO 5 - To discuss the classification of elementary particles and quark model.</p> <p>CO 6 - To analyse the characteristics and behavior of elementary</p>
242	PC1764	Major – Elective - IV (a) Nanomaterials and its applications	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 6 - To communicate appropriately and effectively, in a scientific context using present technology.</p> <p>PSO 7 - To develop entrepreneurial skills, empowered according to the professional requirement and become self-dependent.</p>	<p>CO 1 - To infer the history of nanotechnology and explain the various dimensions of nanostructures.</p> <p>CO 2 - To apply the characterization techniques of nanomaterials. (XRD, SEM, TEM and analytical electron microscope).</p> <p>CO 3 - To explain the synthesis of nanomaterials and categorize their properties.</p> <p>CO 4 - To interpret quantum well, quantum wires and quantum dots.</p> <p>CO 5 - To explain the carbon nanotubes and its applications.</p> <p>CO 6 - To discuss the applications of nanotechnology in various fields.</p>
243	PC1765	Major – Elective - IV (b) Basic AstroPhysics	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 6 - To communicate appropriately and effectively, in a scientific context using present technology.</p> <p>PSO 7 - To develop entrepreneurial skills, empowered according to the professional requirement and become self-dependent.</p>	<p>CO 1 - To identify the historical evolution of sun and planets.</p> <p>CO 2 - To apply the principles of Physics in the measurements of distances, mass, radius, density and luminosity of stars.</p> <p>CO 3 - To compare the resolving power and light gathering power of an astronomical telescope.</p> <p>CO 4 - To explain the physical characteristics of sun and other stars.</p> <p>CO 5 - To analyse the structure of the universe and milky way galaxy.</p> <p>CO 6 - To discuss the observations of galaxies, dark matter, quasars and pulsars.</p> <p>CO 7 - To develop a deeper understanding of some important</p>
244	PC1766	Major – Elective - IV (c) Digital Signal Processing	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 6 - To communicate appropriately and effectively, in a scientific context using present technology.</p> <p>PSO 7 - To develop entrepreneurial skills, empowered according to the professional requirement and become self-dependent.</p>	<p>CO 1 - To formulate discrete time signals, evaluate their energy and power, check for periodicity and evaluate the period of a signal.</p> <p>CO 2 - To identify properties of discrete time systems. (stability, causality, invertibility).</p> <p>CO 3 - To evaluate discrete-time fourier transform (DTFT) of a sequence.</p> <p>CO 4 - To compute the linear and circular convolution of discrete-time sequences.</p> <p>CO 5 - To estimate the z-transform of a sequence, identify its region of convergence and compute the inverse Z- transform.</p> <p>CO 6 - To evaluate the discrete Fourier transform (DFT) of a sequence, relate it to the DTFT and use the DFT to compute the</p>
245	PC17P5	Major Practical V - Physics Lab V	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p> <p>PSO 6 - To communicate appropriately and effectively, in a scientific context using present technology.</p> <p>PSO 7 - To develop entrepreneurial skills, empowered according to the professional requirement and become self-dependent.</p>	<p>CO 1 - To demonstrate the experimental techniques and develop competence in handling optical instruments.</p> <p>CO 2 - To demonstrate an understanding of the scientific method and apply it in practice.</p> <p>CO 3 - To analyse the diffraction and dispersion phenomena in optical elements (grating or prism) using spectrometer.</p> <p>CO 4 - To measure the various optical parameters.</p> <p>CO 5 - To develop practical hands-on experience applying widely used techniques to investigate optical phenomena.</p> <p>CO 6 - To record, analyze, interpret and critically evaluate cauchy's constant and hartmann's interpolation formula experimentally.</p>

246	PC17P6	Major Practical VI - Physics Lab VI	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p> <p>PSO 6 - To communicate appropriately and effectively, in a scientific context using present technology.</p> <p>PSO 7 - To develop entrepreneurial skills, empowered according to the professional requirement and become self-dependent.</p>	<p>CO 1 - To demonstrate the experimental techniques and develop competence in handling optical instruments.</p> <p>CO 2 - To demonstrate an understanding of the scientific method and apply it in practice. (a familiarity with optics).</p> <p>CO 3 - To analyse the diffraction and dispersion phenomena in optical elements (grating or prism) using spectrometer.</p> <p>CO 4 - To measure the various optical parameters (focal length, dispersive power, refractive index, radius of curvature, minimum deviation etc) using optical elements.</p> <p>CO 5 - To develop practical hands-on experience applying widely used techniques to investigate optical phenomena.</p> <p>CO 6 - To record, analyze, interpret and critically evaluate cauchy's constant and hartmann's interpolation formula experimentally.</p>
247	PC17P7	Major Practical VII - Physics Lab VII	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p> <p>PSO 6 - To communicate appropriately and effectively, in a scientific context using present technology.</p> <p>PSO 7 - To develop entrepreneurial skills, empowered according to the professional requirement and become self-dependent.</p>	<p>CO 1 - To understand the principles of object oriented program to construct computer programs and modeling of experimental data for the solution of problems in Physics.</p> <p>CO 2 - To develop programs using functions and classes.</p> <p>CO 3 - To formulate the applications of pointers and virtual functions.</p> <p>CO 4 - To distinguish formatted and unformatted I/O operations, operator overloading and inheritance.</p> <p>CO 6 - To analyze the concepts trained in the computer lab activities and provide an understanding of data acquisition and analysis.</p>
248	PSK176	SBC -Project	<input type="checkbox"/>	<input type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p> <p>PSO 6 - To communicate appropriately and effectively, in a scientific context using present technology.</p> <p>PSO 7 - To develop entrepreneurial skills, empowered according to the professional requirement and become self-dependent.</p>	<p>CO 1 - To explore new areas of research in Physics.</p> <p>CO 2 - To analyze a research problem and construct tools for data collection.</p> <p>CO 3 - To write research reports and present results in the scientific community.</p> <p>CO 4 - To develop skills to serve in science related industries and agencies.</p> <p>CO 5 - To develop skills to publish articles in reputed journals.</p>
249	PC17S1	Self Learning Course - Physics for Competitive Examination - I	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 6 - To communicate appropriately and effectively, in a scientific context using present technology.</p> <p>PSO 7 - To develop entrepreneurial skills, empowered according to the professional requirement and become self-dependent.</p>	<p>CO 1 - To recall the principles of mechanics and conservation laws; understand the concept of fluid dynamics.</p> <p>CO 2 - To examine the various aberrations and geometry involved in optics.</p> <p>CO 3 - To apply the laws of thermodynamics on heat phenomena.</p>
250	PC17S2	Self Learning Course - Physics for Competitive Examination - II	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 6 - To communicate appropriately and effectively, in a scientific context using present technology.</p> <p>PSO 7 - To develop entrepreneurial skills, empowered according to the professional requirement and become self-dependent.</p>	<p>CO 1 - To recall the principles of mechanics and conservation laws; understand the concept of fluid dynamics.</p> <p>CO 2 - To examine the various aberrations and geometry involved in optics; apply the laws of thermodynamics on heat phenomena.</p>
251	PP2011	Core I – Classical Mechanics	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics. (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.).</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 6 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p> <p>PSO 7 - To understand the impact of Physics in a global, economic,</p>	<p>CO 1 - To understand the basic mechanical concepts related to single and system of particles.</p> <p>CO 2 - To apply various mechanical principles to find solution for physical problems.</p> <p>CO 3 - To solve the equations of motion using lagrangian, hamiltonian and hamilton- jacobi equations.</p> <p>CO 4 - To explain the origin of coriolis and centrifugal terms in the equation of motion in a rotating frame.</p> <p>CO 5 - To understand and develop a scientific knowledge in central force problems and relativity.</p>
252	PP2012	Core II – Mathematical Physics	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics. (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.).</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 6 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p> <p>PSO 7 - To understand the impact of Physics in a global, economic,</p>	<p>CO 1 - To apply the various theorems in complex analysis to evaluate definite integrals.</p> <p>CO 2 - To determine the series solutions and the recurrence relations (bessel, legendre and hermite differential equations) and solve problems associated with them.</p> <p>CO 3 - To discuss the basic principles and methods used for the analysis of partial differential equations and apply the techniques to related problems.</p> <p>CO 4 - To discuss the concepts of fourier, laplace and inverse laplace transform, tensors, group theory and their properties.</p> <p>CO 5 - To develop expertise in mathematical techniques required in Physics and to enhance problem solving skills.</p>

253	PP2013	Core III – Quantum Mechanics- I	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics. (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.).</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 6 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p> <p>PSO 7 - To understand the impact of Physics in a global, economic,</p>	<p>CO 1 - To summarize the concept of wave function and the postulates of quantum mechanics.</p> <p>CO 2 - To formulate time dependent and time independent equation and solve them for simple potentials.</p> <p>CO 3 - To evaluate the eigen values and eigen function spin and total angular momenta and determine the matrices.</p> <p>CO 4 - To analyze the principles of quantum theory, equation of motion, scattering theory and angular momentum.</p>
254	PP2014	Elective I – (a) Advanced Nuclear Physics	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics. (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.).</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 6 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p> <p>PSO 7 - To understand the impact of Physics in a global, economic,</p>	<p>CO 1 - To understand the basic knowledge on nuclei and neutron to know other factors like properties and scattering.</p> <p>CO 2 - To examine the neutron interactions to formulate probability, diffusion, fermi-age equations.</p> <p>CO 3 - To analyse the working of nuclear reactors and its reaction to produce nuclear energy.</p> <p>CO 4 - To study the nuclear fusion reaction and apply its principle for stellar energy.</p>
255	PP2015	Elective I – (b) Molecular Physics	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics. (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.).</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 6 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p> <p>PSO 7 - To understand the impact of Physics in a global, economic,</p>	<p>CO 1 - To understand the chemical bonding of molecules and various theories of homo and hetero nuclear diatomic molecules.</p> <p>CO 2 - To analyze the symmetry operations and molecular orbital theory.</p> <p>CO 3 - To analyse the electronic properties of molecules, newtonian and hamiltonian dynamics and phase space trajectories.</p> <p>CO 4 - To understand the molecular collisions and different energies caused by reactive collisions.</p> <p>CO 5 - To evaluate the transport of electron and the formation of electronic bands and spectra.</p>
256	PP2016	Elective I – (c) Numerical Methods	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics. (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.).</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 6 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p> <p>PSO 7 - To understand the impact of Physics in a global, economic,</p>	<p>CO 1 - To apply various interpolation methods and finite difference concepts.</p> <p>CO 2 - To analyze the numerical solutions of linear and non linear equations.</p> <p>CO 3 - To utilize various numerical methods for differentiation and integration.</p> <p>CO 4 - To solve ordinary differential equations whenever and wherever routine methods are not applicable.</p>
257	PP2021	Core IV – Electromagnetic Theory	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics. (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.).</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 6 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p> <p>PSO 7 - To understand the impact of Physics in a global, economic,</p>	<p>CO 1 - To summarize the fundamental laws of electrostatics based on Maxwell's equations.</p> <p>CO 2 - To enumerate the concept of energy in electrostatic and magnetostatic fields.</p> <p>CO 3 - To illustrate the electrical properties of materials.</p> <p>CO 4 - To solve the wave equation as plane waves in source.</p> <p>CO 5 - To analyze the wave polarization and reflection / transmission of plane waves in homogeneous media.</p>
258	PP2022	Core V – Quantum Mechanics- II	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics. (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.).</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 6 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p> <p>PSO 7 - To understand the impact of Physics in a global, economic,</p>	<p>CO 1 - To enumerate time independent perturbation theory and use approximation methods.</p> <p>CO 2 - To analyze time dependent perturbation theory to discuss absorption and emission of radiation for harmonic perturbation.</p> <p>CO 3 - To interpret quantum theory of atomic and molecular structure.</p> <p>CO 4 - To formulate Klein-Gordon and Dirac equations and discuss the applications.</p>
259	PP2023	Core VI – Condensed Matter Physics – I	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics. (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.).</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 6 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p> <p>PSO 7 - To understand the impact of Physics in a global, economic,</p>	<p>CO 1 - To differentiate between different lattice types and explain the concepts of reciprocal lattice and crystal diffraction.</p> <p>CO 2 - To analyze various crystal imperfections and ordered phases of crystal.</p> <p>CO 3 - To explain the theory of lattice vibrations and analyze the thermal properties of solids.</p> <p>CO 4 - To formulate the problem of electrons in a periodic potential.</p>

260	PP2024	Elective II – (a) Experimental design		<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics. (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.).</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 6 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p> <p>PSO 7 - To understand the impact of Physics in a global, economic, environmental and societal context.</p>	<p>CO 1 - To understand the principle and working of transducers.</p> <p>CO 2 - To examine the measurement systems and errors in it.</p> <p>CO 3 - To analyse the X ray measurements and to find TEM, SEM,EDS, FESEM, AFM, UV Vis, IR, FTIR characterizations.</p> <p>CO 4 - To get an introduction and idea on optical fibers.</p>
261	PP2025	Elective II – (b) Introductory Astronomy, Astro Physics& Cosmology		<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics. (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.).</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 6 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p> <p>PSO 7 - To understand the impact of Physics in a global, economic, environmental and societal context.</p>	<p>CO 1 - To perceive the historical evolution of solar system and universe.</p> <p>CO 2 - To describe the principles of Physics in the formation of astronomical objects like planets, satellites, asteroids and comets.</p> <p>CO 3 - To gain experience with measurement techniques and equipment and develop the ability to assess certainties and assumptions.</p> <p>CO 4 - To interpret the observations of galaxies, dark matter, quasars and pulsars.</p> <p>CO 5 - To achieve a good understanding of physical laws and principles in cosmology.</p>
262	PP2026	Elective II – (c) Laser Physics		<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics. (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.).</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 6 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p> <p>PSO 7 - To understand the impact of Physics in a global, economic, environmental and societal context.</p>	<p>CO 1 - To develop knowledge in the basics of lasers.</p> <p>CO 2 - To enhance comprehension in the principles of lasers .</p> <p>CO 3 - To analyse the control of laser opteries.</p> <p>CO 4 - To familiarize with the diverse applications of lasers.</p>
263	PP20P1	Practical I – Advanced Physics Lab – I (General Physics)		<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 6 - To utilize the obtained scientific knowledge to create eco- friendly environment.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics. (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.).</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 6 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p> <p>PSO 7 - To understand the impact of Physics in a global, economic, environmental and societal context.</p>	<p>CO 1 - To demonstrate practical skills to work with complex problems and advanced experimental equipment.</p> <p>CO 2 - To develop a practical knowledge in hall effect and in determination of magneto resistance.</p> <p>CO 3 - To develop practical experience in LASER experiments.</p> <p>CO 4 - To measure and compare the dielectric constant of various liquids.</p> <p>CO 5 - To apply ultrasonic interferometers to determine the velocity of sound.</p>
264	PP20P2	Practical II – Advanced Physics Lab – II (Programming with C++)		<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 6 - To utilize the obtained scientific knowledge to create eco- friendly environment.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics. (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.).</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 6 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p> <p>PSO 7 - To understand the impact of Physics in a global, economic, environmental and societal context.</p>	<p>CO 1 - To understand the basic concept of Object Oriented Programming (OOP).</p> <p>CO 2 - To interpret the theoretical formulation for physical phenomena and apply experimental numerical.</p> <p>CO 3 - To simulations methods to find the solution.</p> <p>CO 4 - To apply computational methods and numerical algorithms to problems in advanced Physics using C++ programming.</p> <p>CO 5 - To develop a basic knowledge in high level programming languages.</p>
265	PP1731	Core VII - Integrated Electronics		<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p> <p>PO 5 - To carry out internship programme and research projects to develop scientific skills and</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.)</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 5 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p>	<p>CO 1 - To understand the basic operation, features and parameters related to diodes, transistor, switching devices and interpret their applications. (FET, JFET, D-MOSFET, EMOSFET, SCR, DIAC, TRIAC).</p> <p>CO 2 - To explain about the internal circuitry and logic behind any digital system (AND, OR, NOT, NAND, NOR, RTL, TTL, 12L).</p> <p>CO 3 - To assess the working of combinational circuits.(flip flops, counters).</p> <p>CO 4 - To design various synchronous and asynchronous sequential circuits.</p> <p>CO 5 - To understand the characteristics of op-amps and the applications of op-amps.</p>
266	PP1732	Core VIII - Microprocessor and Microcontroller		<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p> <p>PO 5 - To carry out internship programme and research projects to develop scientific skills and</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.)</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 5 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p>	<p>CO 1 - To identify / explain the operation of various components of the microprocessor 8085.</p> <p>CO 2 - To relate and explain the various addressing modes and the instruction set of 8085 microprocessor.</p> <p>CO 3 - To develop skill in writing simple programs for 8085 microprocessor.</p> <p>CO 4 - To understand the various interrupts of 8085 microprocessor.</p> <p>CO 5 - To experiment with the common applications of microprocessor.</p> <p>CO 6 - To explain the architecture of 8051 microcontroller.</p>

267	PP1733	Elective III – (a) Physics of the Cosmos			<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p> <p>PO 5 - To carry out internship programme and research projects to develop scientific skills and innovative ideas.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.)</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 5 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p>	<p>CO 1 - To perceive the historical evolution of solar system and universe.</p> <p>CO 2 - To describe the principles of Physics in the formation of astronomical objects like planets-satellites – asteroids and comets.</p> <p>CO 3 - To examine the requirements and limitations of instrumentation for modern astrophysical observations (optical telescopes and radio telescopes).</p> <p>CO 4 - To explain the basic issues involved in present day astrophysical investigations (red shift and the expansion of the universe).</p> <p>CO 5 - To analyse the formation of binary stars, multiple stars, neutron stars and black holes.</p> <p>CO 6 - To interpret the observations of galaxies, dark matter.</p>
268	PP1734	Elective III – (b) Radiation Physics			<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p> <p>PO 5 - To carry out internship programme and research projects to develop scientific skills and</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.)</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 5 - To demonstrate proficiency in analyzing, applying and solving</p>	<p>CO 1 - To understand the various radiation sources and its interaction with matter.</p> <p>CO 2 - To understand the Design features of the radiation detectors and the accelerators.</p> <p>CO 3 - To acquire skills and apply it in diagnostic technology .</p> <p>CO 4 - To interpret the radiation dosimeter principles.</p> <p>CO 5 - To apply the various radiations in industrial field for scientific development.</p> <p>CO 6 - To identify and apply the radiation for therapy and for diagnosis purposes.</p>
269	PP17P4	Research Project	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p> <p>PO 5 - To carry out internship programme and research projects to develop scientific skills and</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.)</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 5 - To demonstrate proficiency in analyzing, applying and solving</p>	<p>CO 1 - To explore new areas of research in Physics .</p> <p>CO 2 - To analyze a research problem and construct tools for data collection.</p> <p>CO 3 - To write research reports and present results in the scientific community.</p> <p>CO 4 - To develop skills to serve in science related industries and agencies.</p> <p>CO 5 - To develop skills to publish articles in reputed journals.</p>
270	PP17S1	Self Learning Course - Physics for Lectureship Examination – I	<input checked="" type="checkbox"/>			<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p> <p>PO 5 - To carry out internship programme and research projects to develop scientific skills and</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.)</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 5 - To demonstrate proficiency in analyzing, applying and solving</p>	<p>CO 1 - To familiarize with a range of mathematical methods that are essential for solving advanced problems in theoretical Physics.</p> <p>CO 2 - To model mechanical systems, both in inertial and rotating frames, using Lagrange and Hamilton equations.</p> <p>CO 3 - To gain insight into the physical nature of electric and magnetic phenomena.</p> <p>CO 4 - To use quantum mechanical principles to analyze advanced physical phenomena of nature.</p> <p>CO 5 - To understand the theory and methods of statistical Physics and thermodynamics.</p>
271	PP1741	Core IX – Material Science			<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p> <p>PO 5 - To carry out internship programme and research projects to develop scientific skills and</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.)</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 5 - To demonstrate proficiency in analyzing, applying and solving</p>	<p>CO 1 - To understand phase diagrams and relate to the design and control of heat treating procedures.</p> <p>CO 2 - To analyze the elastic behavior of materials.</p> <p>CO 3 - To recognize the nature of dislocations in materials and the role they play in the deformation processes.</p> <p>CO 4 - To review the mechanisms involved in oxidation and corrosion of materials.</p> <p>CO 5 - To compare the different types of composites to design materials having property combinations that are better than those found in the metal alloys, ceramics and polymeric materials.</p>
272	PP1742	Core X - Nuclear and Particle Physics			<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p> <p>PO 5 - To carry out internship programme and research projects to develop scientific skills and</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.)</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 5 - To demonstrate proficiency in analyzing, applying and solving</p>	<p>CO 1 - To understand the properties of Nuclear forces and outline their behavioral formulation.</p> <p>CO 2 - To interpret the behavior and properties of the deuteron in the ground and excited state.</p> <p>CO 3 - To analyze the different nuclear models of the nucleus and examine the application of the shell model of nucleus.</p> <p>CO 4 - To explain the characteristics and effect of radioactive decay phenomena.</p> <p>CO 5 - To discuss the outcome of various types of nuclear reactions.</p> <p>CO 6 - To analyse the working of nuclear reactors.</p> <p>CO 7 - To examine the particle Physics phenomena and their</p>
273	PP1743	Core XI - Molecular Spectroscopy			<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p> <p>PO 5 - To carry out internship programme and research projects to develop scientific skills and</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.)</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 5 - To demonstrate proficiency in analyzing, applying and solving</p>	<p>CO 1 - To apply basic spectroscopic techniques (Microwave, IR, Raman and NMR).</p> <p>CO 2 - To infer basic spectroscopic techniques (Microwave, IR, Raman, ESR, NQR and NMR).</p> <p>CO 3 - To understand the molecular interactions in different spectroscopic methods.</p> <p>CO 4 - To analyze the characteristics of rotational spectra and vibrational energy of diatomic molecules.</p> <p>CO 5 - To design spectrometers (Microwave, IR, Raman and NMR) for characterization of molecules.</p> <p>CO 6 - To utilize various spectroscopic methods suitable for characterizing a molecule .</p>
274	PP17S1	Physics for Lectureship Examination – I	<input checked="" type="checkbox"/>			<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p> <p>PO 5 - To carry out internship programme and research projects to develop scientific skills and</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.)</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 5 - To demonstrate proficiency in analyzing, applying and solving</p>	<p>CO 1 - To familiarize with a range of mathematical methods that are essential for solving advanced problems in theoretical Physics.</p> <p>CO 2 - To model mechanical systems, both in inertial and rotating frames, using Lagrange and Hamilton equations.</p> <p>CO 3 - To gain insight into the physical nature of electric and magnetic phenomena.</p> <p>CO 4 - To use quantum mechanical principles to analyze advanced Physical phenomena of nature.</p> <p>CO 5 - To understand the theory and methods of statistical Physics and thermodynamics.</p>

275	PP1744	Elective IV – (a) Nano Physics		<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p> <p>PO 5 - To carry out internship programme and research projects to develop scientific skills and innovative ideas.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.)</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 5 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p>	<p>CO 1 - To identify how basic Physics can be used to describe the behaviour of electrons in nano-scale materials.</p> <p>CO 2 - To explain the variation in the density of states in nanostructures for different dimensions.</p> <p>CO 3 - To analyze magneto electronics and applications of Nanotechnology in various fields.</p> <p>CO 4 - To explain Laser effect in Quantum well, Quantum wires & quantum dots.</p> <p>CO 5 - To compare the structure and properties of Carbon allotropes and their applications in the emerging nano technology.</p> <p>CO 6 - To discuss the applications of Quantum Hetro structures and super lattices.</p> <p>CO 7 - To develop key concepts in Single electron transistor.</p>
276	PP1745	Elective IV – (b) Quantum Field Theory		<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p> <p>PO 5 - To carry out internship programme and research projects to develop scientific skills and innovative ideas.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.)</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 5 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p>	<p>CO 1 - To explain the need for a classical theoretical approach to quantum theory.</p> <p>CO 2 - To interpret combinations in different phases of field theories characteristics by patterns of symmetric breaking.</p> <p>CO 3 - To examine the significance of Neopher's theorem.</p> <p>CO 4 - To solve problems based on Feynman diagrams.</p> <p>CO 5 - To solve problems based on Feynman diagrams.</p> <p>CO 6 - To understand the concepts of field quantization.</p> <p>CO 7 - To design calculation techniques for quantum electrodynamics.</p> <p>CO 8 - To survey the quantization around non perturbative solutions of quantum field theory.</p>
277	PP17P3	Practical III - Advanced Physics Lab – III (Electronics)		<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p> <p>PO 5 - To carry out internship programme and research projects to develop scientific skills and innovative ideas.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.)</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 5 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p>	<p>CO 1 - To analyse the working of code converters (BCD / Gray, excess 3).</p> <p>CO 2 - To design various synchronous and asynchronous sequential circuits and study their working.</p> <p>CO 3 - To analyse the applications of op- amps (sine, triangular wave generator, low, high and band pass filters).</p> <p>CO 4 - To analyse the behavior of counters (up/down, mod, ring).</p> <p>CO 5 - To analyse the working of electronic circuits (multiplexer, demultiplexer, adder, subtractor).</p>
278	PP17P4	Practical IV – Advanced Physics Lab – IV (Microprocessor and Micro Controller)		<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p> <p>PO 5 - To carry out internship programme and research projects to develop scientific skills and innovative ideas.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.)</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 5 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p>	<p>CO 1 - To experiment with assembly language programming on 8085 microprocessor (Addition, Subtraction, Multiplication & Division).</p> <p>CO 2 - To apply assembly language programming on microprocessor (Data Manipulation, square of numbers, counters).</p> <p>CO 3 - To Analyse the interfacing of microprocessor 8085 with I/O devices (A/D & D/A, Stepper motor).</p> <p>CO 4 - To apply assembly language programs for 8051 microcontroller.</p>
279	PP17S2	Self Learning Course - Physics for Lectureship Examination – II		<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p> <p>PO 5 - To carry out internship programme and research projects to develop scientific skills and innovative ideas.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.)</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 5 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p>	<p>CO 1 - To understand the physical construction, working and operational characteristics of semiconductor devices.</p> <p>CO 2 - To attain knowledge on the structure and dynamics of the molecules through various theories.</p> <p>CO 3 - To develop analytical thinking to understand the phenomenon that decide various properties of solids.</p> <p>CO 4 - To know the scientific, environmental and technological applications of nuclear Physics.</p> <p>CO 5 - To study the fundamentals of wave mechanics.</p>
280	MPP191	C1:Professional Skillsfor Teaching – Learning		<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p> <p>PO 5 - To carry out internship programme and research projects to develop scientific skills and innovative ideas.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.)</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 5 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p>	<p>CO 1 - To acquire practical skills (in subject) aiming at gaining confidence to handle practical classes.</p> <p>CO 2 - To develop teaching skills and gain confidence in teaching.</p>
281	MPP182	C2:ResearchMethodology		<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p> <p>PO 5 - To carry out internship programme and research projects to develop scientific skills and innovative ideas.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.)</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 5 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p>	<p>CO 1 - To assess the fundamentals of thin film preparation and characterize thin film in terms of its optical, electrical, magnetic and mechanical properties.</p> <p>CO 2 - To understand the basic concepts of research and its methodologies of scholarly writing and evaluate its quality.</p> <p>CO 3 - To solve partial differential equations and special function of mathematical Physics.</p> <p>CO 4 - To demonstrate an understanding of the basic features and concepts of the Sun and other stars.</p> <p>CO 5 - To examine the fundamental principles, theories and applications of photonic crystals.</p>
282	MPP183	C3:Advanced Physics		<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p> <p>PO 5 - To carry out internship programme and research projects to develop scientific skills and innovative ideas.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.)</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 5 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p>	<p>CO 1 - To interpret the band structure of metals, semiconductors and insulators.</p> <p>CO 2 - To analyze the structure, preparation methods and applications of high temperature cuprate superconductors.</p> <p>CO 3 - To describe the various crystal growth techniques and determine the growth parameters of crystals.</p> <p>CO 4 - To categorize different types of sensors and their characteristics.</p>

283	MPP184	C3:Principles and Methods of Crystal Growth			<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p> <p>PO 5 - To carry out internship programme and research projects to develop scientific skills and</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.)</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 5 - To demonstrate proficiency in analyzing, applying and solving</p>	<p>CO 1 - To categorize the various crystal growth methods.</p> <p>CO 2 - To understand the various theories of nucleation process involved in crystal growth.</p> <p>CO 3 - To discuss the theories of crystal growth and familiarize in choosing an apt method for growing materials.</p> <p>CO 4 - To Discuss the methods of melt growth technique for both conventional and non-conventional growth processes.</p> <p>CO 5 - To compile the various crystal growth techniques.</p>	
284	MPP185	C3: Research Trends in Nano science and Technology			<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p> <p>PO 5 - To carry out internship programme and research projects to develop scientific skills and</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.)</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 5 - To demonstrate proficiency in analyzing, applying and solving</p>	<p>CO 1 - To list the basic properties of nanoparticles (size, shape, density melting, boiling point).</p> <p>CO 2 - To explain the technique involved in measuring different properties of nanoparticles.</p> <p>CO 3 - To apply different methods used to control the structure of nanoparticles.</p> <p>CO 4 - To explain the characteristics and behaviour of nanoparticles in dispersed system.</p> <p>CO 5 - To utilise different characterisation methods to estimate physical properties of nanoparticles.</p>	
285	MPP186	C3: Electronic Structure Calculations for Solids			<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p> <p>PO 5 - To carry out internship programme and research projects to develop scientific skills and innovative ideas.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.)</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 5 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p>	<p>CO 1 - To identify the eigen values and eigen functions of materials using theoretical calculations.</p> <p>CO 2 - To discuss the probability of occupancy of an electron in an energy state at various pressures by electronic structure calculation.</p> <p>CO 3 - To analyse the crystal parameters to investigate electronic and structural phase transition in crystalline materials.</p> <p>CO 4 - To apply the FP-LMTO method in the Basic theories of electronic structure.</p> <p>CO 5 - To explain the phenomenon of Metallization, superconductivity and Fermi surface in materials.</p> <p>CO 6 - To compare the various band structure methods suitable for metals, semiconductors and insulators using recent reprints (Kl,Rbl, Csl, CsBr and alkali halides).</p> <p>CO 7 - To develop a deeper research experience in electronic</p>	
286	MPP19D	Dissertation and Viva Voce				<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p> <p>PO 5 - To carry out internship programme and research projects to develop scientific skills and</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.)</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 5 - To demonstrate proficiency in analyzing, applying and solving</p>	<p>CO 1 - To explore new areas of research in Physics.</p> <p>CO 2 - To analyze a research problem and construct tools for data collection.</p> <p>CO 3 - To write research reports and present results in the scientific community.</p> <p>CO 4 - To develop skills to serve in science related industries and agencies.</p> <p>CO 5 - To develop skills to publish articles in reputed journals.</p>	
2019-2020									
287	PC1711	Major Core I - Mechanics and Properties of Matter	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 6 - To communicate appropriately and effectively, in a scientific context using present technology.</p> <p>PSO 7 - To develop entrepreneurial skills, empowered according to the professional requirement and become self-dependent.</p>	<p>CO 1 - To understand the fundamentals of dynamics .</p> <p>CO 2 - To explain the conservation laws.</p> <p>CO 3 - To apply the concept of moment of inertia to objects of different shapes .</p> <p>CO 4 - To distinguish elastic and inelastic collisions and discuss the centre of pressure and Bernoulli's theorem.</p> <p>CO 5 - To explain the different moduli of elasticity.</p> <p>CO 6 - To analyze the various properties of liquids through theory and experiments.</p>	
288	AP1711	Allied I – Allied Physics – I (for I B.Sc Maths)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 6 - To communicate appropriately and effectively, in a scientific context using present technology.</p> <p>PSO 7 - To develop entrepreneurial skills, empowered according to the professional requirement and become self-dependent.</p>	<p>CO 1 - To interpret simple systems undergoing simple harmonic motion and derive equations of motion.</p> <p>CO 2 - To demonstrate the bending moment Diagrams.</p> <p>CO 3 - To explain the properties and behavior of fluids under various conditions.</p> <p>CO 4 - To distinguish between the characteristics and features of various phenomena of light.</p> <p>CO 5 - To analyze and study the applications of dispersion and refraction through a prism.</p>	
289	PNM171	NMEC – Everyday Physics I	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 6 - To communicate appropriately and effectively, in a scientific context using present technology.</p> <p>PSO 7 - To develop entrepreneurial skills, empowered according to the professional requirement and become self-dependent.</p>	<p>CO 1 - To understand their knowledge of basic scientific principles and fundamental concepts in Physics.</p> <p>CO 2 - To recall various laws in Physics (Newton, Archimedes, conservation, gravitation) applied in day today lie situation.</p> <p>CO 3 - To identify basic Physics principles of instruments (veena, violin,guitar, drum, flute) and devices(thermometer, refrigerator).</p> <p>CO 4 - To explain safety measure for using electricity.</p> <p>CO 5 - To elaborate the properties and application of light properties like refraction, reflection and diffraction.</p> <p>CO 6 - To understand their knowledge of basic scientific principles and fundamental concepts in Physics.</p>	
290	PC1721	Major Core II –Thermal Physics Sound	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 6 - To communicate appropriately and effectively, in a scientific context using present technology.</p> <p>PSO 7 - To develop entrepreneurial skills, empowered according to the professional requirement and become self-dependent.</p>	<p>CO 1 - To recall the concept of kinetic theory of gases.</p> <p>CO 2 - To apply the laws of thermodynamics on heat phenomena.</p> <p>CO 3 - To estimate the experimental methods of transmission of heat.</p> <p>CO 4 - To correlate the concept of simple harmonic motion with vibration of strings.</p> <p>CO 5 - To discuss ultrasonics and the factors affecting the architectural acoustics.</p>	

291	AP1721	Allied I – Allied Physics - II (for I.B.Sc Maths)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 6 - To communicate appropriately and effectively, in a scientific context using present technology.</p> <p>PSO 7 - To develop entrepreneurial skills, empowered according to the professional requirement and become self-dependent.</p>	<p>CO 1 - To discuss the conduction, convection and radiation phenomenon in heat transfer processes.</p> <p>CO 2 - To determine the significance of steady current and alternating current.</p> <p>CO 3 - To explain the fundamental concepts of electromagnetism and apply it to determine the mutual inductance.</p> <p>CO 4 - To understand the basic ideas in diodes and transistors.</p> <p>CO 5 - To discuss the basic digital operations.</p> <p>CO 6 - To apply Kirchoff's laws to simple electrical circuits.</p>
292	PNM172	NMEC – Every Day Physics II	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 6 - To communicate appropriately and effectively, in a scientific context using present technology.</p> <p>PSO 7 - To develop entrepreneurial skills, empowered according to the professional requirement and become self-dependent.</p>	<p>CO 1 - To understand the principle and working of simple devices in Physics.</p> <p>CO 2 - To elaborate various energy sources (hydro, wind, biomass, geothermal).</p> <p>CO 3 - To explain the physical principles used in instruments.</p> <p>CO 4 - To distinguish different heavenly bodies (star, planet, comets, galaxies).</p> <p>CO 5 - To recall various concepts in Physics.</p>
293	PC17P1	Major Practical I - Physics Lab I	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p> <p>PSO 6 - To communicate appropriately and effectively, in a scientific context using present technology.</p> <p>PSO 7 - To develop entrepreneurial skills, empowered according to the professional requirement and become self-dependent.</p>	<p>CO 1 - To apply the theory of elasticity in determining the Young's Modulus of the given material by bending experiments.</p> <p>CO 2 - To revise the perpendicular axes theorem using bifilar pendulum.</p> <p>CO 3 - To illustrate the principle of fluid dynamics by demonstration of experiments (Poiseuille's method and Stoke's method).</p> <p>CO 4 - To evaluate the rigidity modulus of torsion pendulum through a simple experiment.</p> <p>CO 5 - To design a record of an experiment in written form with required figures .</p>
294	PC17P2	Major Practical II - Physics Lab II	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p> <p>PSO 6 - To communicate appropriately and effectively, in a scientific context using present technology.</p> <p>PSO 7 - To develop entrepreneurial skills, empowered according to the professional requirement and become self-dependent.</p>	<p>CO 1 - To demonstrate the phenomena of thermal conductivity in good and bad conductor.</p> <p>CO 2 - To apply the laws of transverse vibration and estimate the frequency of A.C mains using sonometer.</p> <p>CO 3 - To interpret the principle involved in the formation of Lissajous figures using Oscillators.</p> <p>CO 4 - To understand the concept and characteristics of sound through experiments.</p> <p>CO 5 - To organize and present the performed experiments in graphical format.</p>
295	AP17P1	Allied Practical – General Physics Lab	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 6 - To communicate appropriately and effectively, in a scientific context using present technology.</p> <p>PSO 7 - To develop entrepreneurial skills, empowered according to the professional requirement and become self-dependent.</p>	<p>CO 1 - To understand the basic principles of Physics through experiments.</p> <p>CO 2 - To measure and determine the various physical parameters.</p> <p>CO 3 - To develop an idea about the handling of various instruments.</p> <p>CO 4 - To get an idea about basic Scientific knowledge and implications of its broad working principle.</p> <p>CO 5 - To analysing, interpreting and evaluating data.</p> <p>CO 6 - To build a foundation in Scientific Career.</p>
296	PC1731	Major Core III – Electricity and Magnetism	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 6 - To communicate appropriately and effectively, in a scientific context using present technology.</p> <p>PSO 7 - To develop entrepreneurial skills, empowered according to the professional requirement and become self-dependent.</p>	<p>CO 1 - To explain the concept and features of the electrostatic force (Coulomb force), magnetic field, flux, force, the electric force field, Gauss's Law and its application (charged sphere, cylinder, plane sheet).</p> <p>CO 2 - To analyse the presence of electric potential and potential difference, within a framework of distributed symmetric charge distributions.</p> <p>CO 3 - To understand the laws of electromagnetic induction as applied to self and mutual induction.</p> <p>CO 4 - To analyse AC circuit behavior.</p> <p>CO 5 - To apply kirchoff's laws and network theorems to electrical circuits .</p>
297	PC1732	Major – Elective - I (a) Non – Conventional Energy Sources	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 6 - To communicate appropriately and effectively, in a scientific context using present technology.</p> <p>PSO 7 - To develop entrepreneurial skills, empowered according to the professional requirement and become self-dependent.</p>	<p>CO 1 - To understand the utilization of solar energy for generating the power.</p> <p>CO 2 - To apply the solar energy in various sectors.</p> <p>CO 3 - To explain the basic principles of wind energy conversion, its components and its classification.</p> <p>CO 4 - To explain the various Biomass conversion Processes.</p> <p>CO 5 - To discuss the geothermal energy resources and chemical energy resources.</p> <p>CO 6 - To outline the extraction of useful energy from Earth, Ocean, Wind and Sun.</p> <p>CO 7 - To design the various pollution-free energy resources.</p> <p>CO 8 - To solve the present and future energy crisis.</p>
298	PC1733	Major – Elective - I (b) Medical Physics	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 6 - To communicate appropriately and effectively, in a scientific context using present technology.</p> <p>PSO 7 - To develop entrepreneurial skills, empowered according to the professional requirement and become self-dependent.</p>	<p>CO 1 - To understand the Anatomical terms of the body.</p> <p>CO 2 - To explain the physical dynamics of the body.</p> <p>CO 3 - To analyse the heat and pressure system of the body.</p> <p>CO 4 - To discuss the optical, electrical and acoustical behavior of the human body.</p> <p>CO 5 - To gain knowledge and application ideas regarding radiations and diagnostic systems.</p> <p>CO 6 - To identify the radiation units and will be able to measure the radiation dose.</p>

299	PC1734	Major – Elective - I (c) Physics of Earth	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 6 - To communicate appropriately and effectively, in a scientific context using present technology.</p> <p>PSO 7 - To develop entrepreneurial skills, empowered according to the professional requirement and become self-dependent.</p>	<p>CO 1 - To understand the scientific ideas of how the universe formed and how it is expanding.</p> <p>CO 2 - To discuss the general characteristics and origin of Universe.</p> <p>CO 3 - To explain the physical dimensions and the internal structure of the earth.</p> <p>CO 4 - To discuss the various regions in earth (Hydrosphere, Atmosphere, Cryosphere and Bio-sphere).</p> <p>CO 5 - To explain the dynamical processes that happen in earth.</p> <p>CO 6 - To analyse the earth's temperature change processes at local to global scales.</p> <p>CO 7 - To discuss the evolution of life on earth and its role in</p>
300	PC17P3	Major Practical III - Physics Lab III	<input checked="" type="checkbox"/>			<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p> <p>PSO 6 - To communicate appropriately and effectively, in a scientific context using present technology.</p> <p>PSO 7 - To develop entrepreneurial skills, empowered according to the professional requirement and become self-dependent.</p>	<p>CO 1 - To understand the scientific method and an ability to apply the scientific method in practice.</p> <p>CO 2 - To understand the theory of Ballistic galvanometer by doing experiments.</p> <p>CO 3 - To recall the basic experiments.</p> <p>CO 4 - To improve the basic skills and attitude which help them to apply these skills in their field of Physics.</p> <p>CO 5 - To understand the practical knowledge of various bridges (Desauty's and Owen's bridge) by demonstration of experiments.</p> <p>CO 6 - To determine the resonant frequency and Q value of a series and parallel LCR circuit and be able to verify the Thevenin's and Norton's theorem.</p> <p>CO 7 - To compile a record of an experiment in a clear and logical written form (e.g., lab manual report, Record) augmented with</p>
301	AP1731	Allied II – Allied Physics - I (for II B.Sc Chemistry)	<input checked="" type="checkbox"/>			<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p> <p>PSO 6 - To communicate appropriately and effectively, in a scientific context using present technology.</p> <p>PSO 7 - To develop entrepreneurial skills, empowered according to the professional requirement and become self-dependent.</p>	<p>CO 1 - To interpret simple systems undergoing simple harmonic motion and derive equations of motion.</p> <p>CO 2 - To demonstrate the bending moment diagrams (Distinguish different type of bending).</p> <p>CO 3 - To explain the properties and behavior of fluids under various conditions.</p> <p>CO 4 - To distinguish between the characteristics and features of various phenomena of light.</p> <p>CO 5 - To analyze and study the applications of dispersion and refraction through a prism.</p>
302	PC1741	Major Core IV – Analog System and Application	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 6 - To communicate appropriately and effectively, in a scientific context using present technology.</p> <p>PSO 7 - To develop entrepreneurial skills, empowered according to the professional requirement and become self-dependent.</p>	<p>CO 1 - To understand the basics of semiconductor Physics for intrinsic and extrinsic materials.</p> <p>CO 2 - To examine the operation, features and parameters related to diodes, transistor, and interpret their applications.</p> <p>CO 3 - To justify the function of semiconductor diodes in filter and bridge circuits.</p> <p>CO 4 - To design amplifier circuits with and without feedback.</p> <p>CO 5 - To analyze the different types of oscillators based on their circuit design LC, RC, RC phase shift, Wien bridge, crystal.</p> <p>CO 6 - To analyse the characteristics and various applications of the op-amp.</p>
303	PC1742	Major – Elective - II (a) Fibre Optics	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 6 - To communicate appropriately and effectively, in a scientific context using present technology.</p> <p>PSO 7 - To develop entrepreneurial skills, empowered according to the professional requirement and become self-dependent.</p>	<p>CO 1 - To explain the various methods of propagation of light waves through various types of fibres.</p> <p>CO 2 - To explain the structure and performance of LEDES and LASERS.</p> <p>CO 3 - To classify the optical sources and detectors and to discuss their principle .</p> <p>CO 4 - To discuss the channel impairments such as losses and dispersion; Analyse various coupling losses .</p> <p>CO 5 - To understand and compare operation, principles, characteristics, design architecture of modulators and detectors of light.</p>
304	PC1743	Major – Elective - II (b) Microprocessor	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 6 - To communicate appropriately and effectively, in a scientific context using present technology.</p> <p>PSO 7 - To develop entrepreneurial skills, empowered according to the professional requirement and become self-dependent.</p>	<p>CO 1 - To explain the architecture of 8085 microprocessor.</p> <p>CO 2 - To analyze the instruction set of 8085 microprocessor.</p> <p>CO 3 - To develop skill in writing simple programs for 8085 microprocessor.</p> <p>CO 4 - To examine the programming techniques with additional instructions.</p> <p>CO 5 - To analyze the 8085 microprocessor applications. (counters and generation of waves forms).</p>
305	PC1744	Major – Elective - II (c) Communication System	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 6 - To communicate appropriately and effectively, in a scientific context using present technology.</p> <p>PSO 7 - To develop entrepreneurial skills, empowered according to the professional requirement and become self-dependent.</p>	<p>CO 1 - To understand the basic ideas regarding modulation in communication system .</p> <p>CO 2 - To understand the frequency and pulse modulation and explain its detection.</p> <p>CO 3 - To identify and apply appropriate techniques, resources and to solve problems in mobile communication system.</p> <p>CO 4 - To develop the ideas in Satellite Communication.</p> <p>CO 5 - To apply the technical skills and modern tools in electronic communication systems .</p>
306	PC17P4	Major Practical IV - Physics Lab IV	<input checked="" type="checkbox"/>			<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p> <p>PSO 6 - To communicate appropriately and effectively, in a scientific context using present technology.</p> <p>PSO 7 - To develop entrepreneurial skills, empowered according to the professional requirement and become self-dependent.</p>	<p>CO 1 - To develop the basic experiments.</p> <p>CO 2 - To improve basic skills and attitude which help them to apply these skills in their field of Physics.</p> <p>CO 3 - To understand the principle and working of analog electronic circuits (zener diode, bridge rectifier) through some basic experiments.</p> <p>CO 4 - To analyze the physical principle involved in the various instruments and design simple circuits for amplifiers (single stage CE amplifier with and without feedback).</p> <p>CO 5 - To Construct simple circuits containing operational amplifiers such as adder and subtractor, differentiator and integrator.</p> <p>CO 6 - To apply conceptual understanding of the Physics to general real-world situations.</p>

307	AP17P3	Allied Practical – General Physics Lab	<input checked="" type="checkbox"/>			<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p> <p>PSO 6 - To communicate appropriately and effectively, in a scientific context using present technology.</p> <p>PSO 7 - To develop entrepreneurial skills, empowered according to the professional requirement and become self-dependent.</p>	<p>CO 1 - To demonstrate the phenomena of thermal conductivity in good and bad conductor.</p> <p>CO 2 - To apply the laws of transverse vibration and estimate the frequency of A.C mains using sonometer.</p> <p>CO 3 - To interpret the principle involved in the formation of Lissajous figures using oscillators.</p> <p>CO 4 - To understand the concept and characteristics of sound through experiments.</p> <p>CO 5 - To organize and present the performed experiments in graphical format.</p>
308	AP1741	Allied II – Allied Physics - II (for II B.Sc Chemistry)	<input checked="" type="checkbox"/>			<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 6 - To communicate appropriately and effectively, in a scientific context using present technology.</p> <p>PSO 7 - To develop entrepreneurial skills, empowered according to the professional requirement and become self-dependent.</p>	<p>CO 1 - To demonstrate the phenomena of thermal conductivity in good and bad conductor.</p> <p>CO 2 - To apply the laws of transverse vibration and estimate the frequency of A.C mains using sonometer.</p> <p>CO 3 - To interpret the principle involved in the formation of Lissajous figures using oscillators.</p> <p>CO 4 - To understand the concept and characteristics of sound through experiments.</p> <p>CO 5 - To organize and present the performed experiments in graphical format.</p>
309	PC1751	Major Core V - Element of Modern Physics	<input checked="" type="checkbox"/>			<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 6 - To communicate appropriately and effectively, in a scientific context using present technology.</p> <p>PSO 7 - To develop entrepreneurial skills, empowered according to the professional requirement and become self-dependent.</p>	<p>CO 1 - To explain the theories and experiment related to particle and wave nature of particles.</p> <p>CO 2 - To identify particle nature experiments and wave nature experiments.</p> <p>CO 3 - To define uncertainty principle.</p> <p>CO 4 - To analyse various models of atomic spectra.</p> <p>CO 5 - To solve Schrodinger equation in different dimensional stages.</p> <p>CO 6 - To estimate Lorentz transformation for length contraction, time dilation.</p>
310	PC1752	Major Core VI - Optics	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 6 - To communicate appropriately and effectively, in a scientific context using present technology.</p> <p>PSO 7 - To develop entrepreneurial skills, empowered according to the professional requirement and become self-dependent.</p>	<p>CO 1 - To explain the fundamental principle of optics.</p> <p>CO 2 - To determine the behavior of a ray at any optical surface.</p> <p>CO 3 - To explain the types of waves and its characteristics.</p> <p>CO 4 - To analyze the intensity variation of light due to polarization, interference and diffraction.</p> <p>CO 5 - To distinguish Interference, diffraction and polarization.</p> <p>CO 6 - To test the optical planeness of any optical surface.</p> <p>CO 7 - To measure the various optical parameters.</p> <p>CO 8 - To understand the interference and diffraction from wave optics concepts and know its applications.</p> <p>CO 9 - To understand polarization of light and its applications</p>
311	PC1753	Major Core VII - Solid State Physics	<input checked="" type="checkbox"/>			<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 6 - To communicate appropriately and effectively, in a scientific context using present technology.</p> <p>PSO 7 - To develop entrepreneurial skills, empowered according to the professional requirement and become self-dependent.</p>	<p>CO 1 - To illustrate various types of bonding present in solids with example.</p> <p>CO 2 - To explain the various crystal parameters and structures.</p> <p>CO 3 - To discuss the various theories involved in magnetic materials.</p> <p>CO 4 - To describe polarization processes and analyze the information contained in the temperature and frequency dependence of dielectric materials.</p> <p>CO 5 - To analyze the structure and physical properties of semiconductors.</p> <p>CO 6 - To describe and discuss the theory of superconductivity and superconducting materials.</p>
312	PC1754	Major – Elective - III (a) Programming with C++	<input checked="" type="checkbox"/>			<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 6 - To communicate appropriately and effectively, in a scientific context using present technology.</p> <p>PSO 7 - To develop entrepreneurial skills, empowered according to the professional requirement and become self-dependent.</p>	<p>CO 1 - To describe the principles of object oriented program.</p> <p>CO 2 - To apply object oriented programming techniques to solve computing problems.</p> <p>CO 3 - To develop programs using functions and classes.</p> <p>CO 4 - To develop programs using constructor, destructor, operator overloading and inheritance.</p> <p>CO 5 - To formulate the applications of pointers and virtual functions.</p> <p>CO 6 - To distinguish formatted and unformatted I/O operations.</p>
313	PC1755	Major – Elective - III (b) Applied Physics	<input checked="" type="checkbox"/>			<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 6 - To communicate appropriately and effectively, in a scientific context using present technology.</p> <p>PSO 7 - To develop entrepreneurial skills, empowered according to the professional requirement and become self-dependent.</p>	<p>CO 1 - To understand the general Physics principles of instruments used in the medical field.</p> <p>CO 2 - To explain the use of non ionizing radiation in imaging the body.</p> <p>CO 3 - To outline various features and behavioral activity of the Sun and heavenly bodies of solar system.</p> <p>CO 4 - To discuss the transformation and characteristics of fiber and its manufacturing techniques.</p> <p>CO 5 - To interpret the technique involved in camera, television, etc.</p> <p>CO 6 - To explain the principles, concepts and operation of satellite communication.</p>
314	PC1756	Major – Elective - III (c) Bio Physics	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 6 - To communicate appropriately and effectively, in a scientific context using present technology.</p> <p>PSO 7 - To develop entrepreneurial skills, empowered according to the professional requirement and become self-dependent.</p>	<p>CO 1 - To explain atomic and molecular structure of biomolecules.</p> <p>CO 2 - To interpret the structure of cells and the major components within a cell.</p> <p>CO 3 - To discuss the importance of diffusion, random walks, entropy and self-assembly in biological systems.</p> <p>CO 4 - To illustrate the models of cellular dynamics.</p> <p>CO 5 - To describe stem cell and brain structure; Explain the core concepts of biological literacy.</p>

315	PSK175	Skill Based Course - Basic electric circuits and Applications	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 6 - To communicate appropriately and effectively, in a scientific context using present technology.</p> <p>PSO 7 - To develop entrepreneurial skills, empowered according to the professional requirement and become self-dependent.</p>	<p>CO 1 - To recall the basic definitions and units of electrical quantities.</p> <p>CO 2 - To analyze the circuit elements and their connections .</p> <p>CO 3 - To understand various power generation methods.</p> <p>CO 4 - To develop their own circuits using electrical wiring.</p> <p>CO 5 - To compare the Physics concepts behind various electrical instruments and appliances.</p> <p>CO 6 - To demonstrate uses of tester & multimeter, LDR, microphone, loudspeaker, etc.</p> <p>CO 7 - To test for the working of electrical circuits and appliances. music bell, electric fan, lamp controlled by switch, etc.,</p>
316	PC1761	Major Core VIII - Mathematical Methods of Physics	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 6 - To communicate appropriately and effectively, in a scientific context using present technology.</p> <p>PSO 7 - To develop entrepreneurial skills, empowered according to the professional requirement and become self-dependent.</p>	<p>CO 1 - To illustrate linear dependence and combination of vectors as quantities in Physics .</p> <p>CO 2 - To evaluate problems in matrices .</p> <p>CO 3 - To solve ordinary and partial differential equations related to Physical Science.</p> <p>CO 4 - To adapt Fourier transform technique to obtain the Fourier series of periodic functions of Physics.</p> <p>CO 5 - To understand and manipulate random variables using the theory of probability including tools of probability transformation and characteristic functions.</p>
317	PC1762	Major Core IX - Digital System and Application	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 6 - To communicate appropriately and effectively, in a scientific context using present technology.</p> <p>PSO 7 - To develop entrepreneurial skills, empowered according to the professional requirement and become self-dependent.</p>	<p>CO 1 - To understand the fundamental concepts and techniques used in Digital Electronics.</p> <p>CO 2 - To perform conversions among different number systems and apply in digital designing.</p> <p>CO 3 - To infer the basic logic gates, understand Boolean algebra and simplify simple Boolean functions by using basic Boolean properties.</p> <p>CO 4 - To understand, analyse and design various combinational and sequential circuits.</p> <p>CO 5 - To understand the architecture and operations of microprocessor 8085.</p> <p>CO 6 - To develop the basic idea about the instruction set and data</p>
318	PC1763	Major Core X - Nuclear Physics	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 6 - To communicate appropriately and effectively, in a scientific context using present technology.</p> <p>PSO 7 - To develop entrepreneurial skills, empowered according to the professional requirement and become self-dependent.</p>	<p>CO 1 - To define the fundamentals of nuclear matter.</p> <p>CO 2 - To apply the principles of Physics in the measurements of Nuclear size, Nuclear spin, Nuclear energy levels and Nuclear magnetism.</p> <p>CO 3 - To assess radioactivity and various nuclear reactions.</p> <p>CO 4 - To explain the decay modes, Radiation Detectors and Particle Accelerators.</p> <p>CO 5 - To discuss the classification of elementary particles and Quark model.</p> <p>CO 6 - To analyse the characteristics and behavior of elementary particles and their fundamental interactions.</p> <p>CO 7 - To develop a deeper understanding of some important</p>
319	PC1764	Major - Elective - IV (a) Nanomaterials and its applications	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 6 - To communicate appropriately and effectively, in a scientific context using present technology.</p> <p>PSO 7 - To develop entrepreneurial skills, empowered according to the professional requirement and become self-dependent.</p>	<p>CO 1 - To infer the history of nanotechnology and explain the various dimensions of nanostructures.</p> <p>CO 2 - To apply the characterization techniques of nanomaterials.</p> <p>CO 3 - To explain the synthesis of nanomaterials and categorize their properties.</p> <p>CO 4 - To interpret quantum well, quantum wires and quantum dots.</p> <p>CO 5 - To explain the carbon nanotubes and its applications.</p> <p>CO 6 - To discuss the applications of nanotechnology in various fields.</p>
320	PC1765	Major - Elective - IV (b) Basic AstroPhysics	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 6 - To communicate appropriately and effectively, in a scientific context using present technology.</p> <p>PSO 7 - To develop entrepreneurial skills, empowered according to the professional requirement and become self-dependent.</p>	<p>CO 1 - To identify the historical evolution of sun and planets.</p> <p>CO 2 - To apply the principles of Physics in the measurements of distances, mass, radius, density and luminosity of stars.</p> <p>CO 3 - To compare the resolving power and light gathering power of an astronomical telescope.</p> <p>CO 4 - To explain the physical characteristics of sun and other stars.</p> <p>CO 5 - To analyse the structure of the universe and milky way galaxy.</p> <p>CO 6 - To discuss the observations of galaxies, dark matter, quasars and pulsars.</p> <p>CO 7 - To develop a deeper understanding of some important</p>
321	PC1766	Major - Elective - IV (c) Digital Signal Processing	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 6 - To communicate appropriately and effectively, in a scientific context using present technology.</p> <p>PSO 7 - To develop entrepreneurial skills, empowered according to the professional requirement and become self-dependent.</p>	<p>CO 1 - To formulate discrete time signals, evaluate their energy and power, check for periodicity and evaluate the period of a signal.</p> <p>CO 2 - To identify properties of discrete time systems.</p> <p>CO 3 - To evaluate discrete-time Fourier transform of a sequence.</p> <p>CO 4 - To compute the linear and circular convolution of discrete-time sequences.</p> <p>CO 5 - To estimate the z-transform of a sequence, identify its region of convergence and compute the inverse Z-transform .</p> <p>CO 6 - To evaluate the discrete Fourier transform (DFT) of a sequence, relate it to the DTFT and use the DFT to compute the linear convolution of two sequences.</p>
322	PC17P5	Major Practical V - Physics Lab V	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p> <p>PSO 6 - To communicate appropriately and effectively, in a scientific context using present technology.</p> <p>PSO 7 - To develop entrepreneurial skills, empowered according to the professional requirement and become self-dependent.</p>	<p>CO 1 - To demonstrate the experimental techniques and develop competence in handling optical instruments.</p> <p>CO 2 - To demonstrate an understanding of the scientific method and apply it in practice.</p> <p>CO 3 - To analyse the diffraction and dispersion phenomena in optical elements using spectrometer.</p> <p>CO 4 - To measure the various optical parameters using optical elements.</p> <p>CO 5 - To develop practical hands-on experience applying widely used techniques to investigate optical phenomena.</p> <p>CO 6 - To record, analyze, interpret and critically evaluate Cauchy's constant and armann's interpolation formula experimentally.</p>

323	PC17P6	Major Practical VI - Physics Lab VI	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p> <p>PSO 6 - To communicate appropriately and effectively, in a scientific context using present technology.</p> <p>PSO 7 - To develop entrepreneurial skills, empowered according to the professional requirement and become self-dependent.</p>	<p>CO 1 - To demonstrate the experimental techniques and develop competence in handling optical instruments.</p> <p>CO 2 - To demonstrate an understanding of the scientific method and apply it in practice.</p> <p>CO 3 - To analyse the diffraction and dispersion phenomena in optical elements using spectrometer.</p> <p>CO 4 - To measure the various optical parameters using optical elements.</p> <p>CO 5 - To develop practical hands-on experience applying widely used techniques to investigate optical phenomena.</p> <p>CO 6 - To record, analyze, interpret and critically evaluate Cauchy's constant and Hartmann's interpolation formula experimentally.</p>
324	PC17P7	Major Practical VII - Physics Lab VII	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p> <p>PSO 6 - To communicate appropriately and effectively, in a scientific context using present technology.</p> <p>PSO 7 - To develop entrepreneurial skills, empowered according to the professional requirement and become self-dependent.</p>	<p>CO 1 - To understand the principles of object oriented program to construct computer programs and modeling of experimental data for the solution of problems in Physics.</p> <p>CO 2 - To develop programs using functions and classes.</p> <p>CO 3 - To formulate the applications of pointers and virtual functions.</p> <p>CO 4 - To distinguish formatted and unformatted I/O operations.</p> <p>CO 5 - To develop programs using constructor, destructor, operator overloading and inheritance.</p> <p>CO 6 - To analyze the concepts trained in the computer lab activities and provide an understanding of data acquisition and analysis.</p>
325	PSK176	SBC -Project	<input type="checkbox"/>	<input type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 5 - To analyze the observed experimental data and relate the results with theoretical expectations.</p> <p>PSO 6 - To communicate appropriately and effectively, in a scientific context using present technology.</p> <p>PSO 7 - To develop entrepreneurial skills, empowered according to the professional requirement and become self-dependent.</p>	<p>CO 1 - To explore new areas of research in Physics.</p> <p>CO 2 - To analyze a research problem and construct tools for data collection.</p> <p>CO 3 - To write research reports and present results in the scientific community.</p> <p>CO 4 - To develop skills to serve in science related industries and agencies.</p> <p>CO 5 - To develop skills to publish articles in reputed journals.</p>
326	PC17S1	Self Learning Course - Physics for Competitive Examination - I	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 6 - To communicate appropriately and effectively, in a scientific context using present technology.</p> <p>PSO 7 - To develop entrepreneurial skills, empowered according to the professional requirement and become self-dependent.</p>	<p>CO 1 - To recall the principles of mechanics and conservation laws; understand the concept of fluid dynamics.</p> <p>CO 2 - To examine the various aberrations and geometry involved in optics.</p> <p>CO 3 - To apply the laws of thermodynamics on heat phenomena.</p>
327	PC17S2	Self Learning Course - Physics for Competitive Examination - II	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institution.</p> <p>PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.</p>	<p>PSO 1 - To understand the core theories and principles of Physics which include mechanics, thermodynamics, electronics, material science, etc.</p> <p>PSO 2 - To develop extensive comprehension of fundamental and diverse applications of Physics.</p> <p>PSO 3 - To apply knowledge of principles, concepts in Physics and analyze their local, national and global impact.</p> <p>PSO 4 - To apply the critical reasoning and computing skills to analyze and solve problems in Physics.</p> <p>PSO 6 - To communicate appropriately and effectively, in a scientific context using present technology.</p> <p>PSO 7 - To develop entrepreneurial skills, empowered according to the professional requirement and become self-dependent.</p>	<p>CO 1 - To recall the principles of mechanics and conservation laws; understand the concept of fluid dynamics.</p> <p>CO 2 - To examine the various aberrations and geometry involved in optics; apply the laws of thermodynamics on heat phenomena.</p>
328	PP1711	Core I - Classical and Statistical Mechanics	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p> <p>PO 5 - To carry out internship programme and research projects to develop scientific skills and innovative ideas.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.)</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 5 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p>	<p>CO 1 - To define the basic mechanical concepts related to single and system of particles.</p> <p>CO 2 - To apply various conservation laws in solution of physical problems.</p> <p>CO 3 - To discuss and understand the motion of a mechanical system using Lagrange and Hamiltonian Formulation.</p> <p>CO 4 - To explain the origin of coriolis and centrifugal terms in the equation of motion in a rotating frame.</p> <p>CO 5 - To distinguish between stable and unstable equilibrium.</p> <p>CO 6 - To develop a fundamental knowledge of classical and quantum statistical mechanics and relate the macroscopic thermodynamics and microscopical statistical mechanics using mathematical methods.</p> <p>CO 7 - To interpret relationship between equilibrium distributions and kinetic process leading to equilibrium.</p> <p>CO 8 - To explain different statistical ensembles, their distribution</p>
329	PP1712	Core II - Electromagnetic Theory	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p> <p>PO 5 - To carry out internship programme and research projects to develop scientific skills and</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.)</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 5 - To demonstrate proficiency in analyzing, applying and solving</p>	<p>CO 1 - To outline the fundamental laws of electrodynamics based on Maxwell's equations.</p> <p>CO 2 - To define and derive expressions for the energy of electrostatic and magnetostatic fields.</p> <p>CO 3 - To explain the Poynting theorem based on Maxwell's equations and interpret the terms in the theorem physically.</p> <p>CO 4 - To solve potential problems in simple geometries using separation of variables and the method of images.</p> <p>CO 5 - To determine the electrical properties of materials and solve the solutions of the wave equation as plane waves in source.</p> <p>CO 6 - To analyze the wave polarization, and reflection/transmission of plane waves in homogenous Media.</p>
330	PP1713	Core III - Numerical and Computational methods	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p> <p>PO 5 - To carry out internship programme and research projects to develop scientific skills and</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.)</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 5 - To demonstrate proficiency in analyzing, applying and solving</p>	<p>CO 1 - To understand the theoretical and practical aspects of the use of numerical methods.</p> <p>CO 2 - To explain theory, algorithms, implementations and analysis of output for numerical methods.</p> <p>CO 3 - To choose appropriate numerical methods to apply for various problems in science.</p> <p>CO 4 - To infer numerical method for various mathematical operations and tasks.</p> <p>CO 5 - To evaluate a function using the appropriate numerical method.</p> <p>CO 6 - To make use of numerical packages such as MATLAB.</p>

331	PP1714	Elective I – (a) Experimental Techniques		<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p> <p>PO 5 - To carry out internship programme and research projects to develop scientific skills and</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.)</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 5 - To demonstrate proficiency in analyzing, applying and solving</p>	<p>CO 1 - To understand the different types of error and curve fitting techniques involved in physical measurement.</p> <p>CO 2 - To relate signal to noise ratio and analyse signal to noise enhancement.</p> <p>CO 3 - To analyse the functioning of various types of nuclear radiation measurement and thermal analysis techniques.</p> <p>CO 4 - To assess the method of measurement of mass and pressure using mass spectrometers, and gauges and vacuum production techniques.</p> <p>CO 5 - To understand the spectroscopic behaviour of molecules and working/application of different types of lasers.</p> <p>CO 6 - To analyse the behaviour of sensors and transducers.</p>
332	PP1715	Elective I – (b) Photonics		<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p> <p>PO 5 - To carry out internship programme and research projects to develop scientific skills and</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.)</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 5 - To demonstrate proficiency in analyzing, applying and solving</p>	<p>CO 1 - To list the optical properties of solids.</p> <p>CO 2 - To explain the theories of different optical properties.</p> <p>CO 3 - To classify different methods of interaction of light and enumerate the various characteristics.</p> <p>CO 4 - To compare different types of laser and their application.</p> <p>CO 5 - To apply new developments in laser technology .</p>
333	PP1721	Core IV – Condensed Matter Physics		<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p> <p>PO 5 - To carry out internship programme and research projects to develop scientific skills and</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.)</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 5 - To demonstrate proficiency in analyzing, applying and solving</p>	<p>CO 1 - To understand the importance of Solid State materials and classify them based on basic concepts. (atomic arrangement, microstructure and crystal binding).</p> <p>CO 2 - To explain the theory of lattice vibrations and thermal properties of solids: Formulate the problem of electrons in a periodic potential.</p> <p>CO 3 - To understand the physical characteristics of solids in terms of their band-structure.</p> <p>CO 4 - To discuss the physical principles of different types of electric and magnetic phenomena in solid materials and relate this to macroscopically measured physical quantities.</p> <p>CO 5 - To elaborate the properties and applications of</p>
334	PP1722	Core V - Mathematical Physics		<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p> <p>PO 5 - To carry out internship programme and research projects to develop scientific skills and</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.)</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 5 - To demonstrate proficiency in analyzing, applying and solving</p>	<p>CO 1 - To explain Cauchy's theorem and its consequences including Cauchy's integral formula.</p> <p>CO 2 - To evaluate residues and apply the residue theorem to evaluate integrals.</p> <p>CO 3 - To determine the series solutions and the recurrence relations and solve problems associated with them.</p> <p>CO 4 - To discuss the basic principles and methods used for the analysis of partial differential equations and apply the techniques to related problems.</p> <p>CO 5 - To apply Green's function to solve problems.</p> <p>CO 6 - To discuss the concepts of various tensors and their applications.</p>
335	PP1723	Core VI – Quantum Mechanics		<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p> <p>PO 5 - To carry out internship programme and research projects to develop scientific skills and innovative ideas.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.)</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 5 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p>	<p>CO 1 - To understand the concept of wave function and the postulates of quantum mechanics.</p> <p>CO 2 - To deduce time dependent and time independent equation and solve them for simple potentials.</p> <p>CO 3 - To evaluate the eigen values and eigen function spin and total angular momenta and determine the matrices.</p> <p>CO 4 - To develop time independent perturbation theory and use approximation methods.</p> <p>CO 5 - To utilize time dependent perturbation theory to discuss absorption and emission of radiation for harmonic perturbation.</p> <p>CO 6 - To understand the concepts of scattering and derive expressions for scattering amplitude using Born approximation and partial wave analysis; Formulate Klein-Gordon and Dirac equations and discuss the applications.</p>
336	PP1724	Elective II – (a) Crystal Growth Techniques and Thin Films Technology		<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p> <p>PO 5 - To carry out internship programme and research projects to develop scientific skills and</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.)</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 5 - To demonstrate proficiency in analyzing, applying and solving</p>	<p>CO 1 - To understand the various theories and formulation related to crystal growth.</p> <p>CO 2 - To analyse the different methods of crystal growth.</p> <p>CO 3 - To apply the advanced crystal growth techniques.</p> <p>CO 4 - To assess the nature/characteristics and deposition technology of thin film.</p> <p>CO 5 - To explain the process of conduction in films and to examine the various applications of thin film.</p>
337	PP1725	Elective II – (b) Communication Physics		<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p> <p>PO 5 - To carry out internship programme and research projects to develop scientific skills and</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.)</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 5 - To demonstrate proficiency in analyzing, applying and solving</p>	<p>CO 1 - To understand the basic concepts of modulation techniques in analog and digital communications.</p> <p>CO 2 - To knowledge about the technologies used in wireless, satellite, fiber optics communication systems.</p> <p>CO 3 - To evaluate fundamental communication system parameters.</p> <p>CO 4 - To outline the basic concepts and characters of a digital communication system.</p> <p>CO 5 - To apply Physics principles in communication technology.</p>
338	PP17P1	Practical I - Advanced Physics Lab – I (General Physics)		<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p> <p>PO 5 - To carry out internship programme and research projects to develop scientific skills and</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.)</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 5 - To demonstrate proficiency in analyzing, applying and solving</p>	<p>CO 1 - To demonstrate practical skills to work with complex problems and advanced experimental equipment.</p> <p>CO 2 - To develop a practical knowledge in Hall Effect and in determination of Magneto resistance.</p> <p>CO 3 - To develop experiments practical experience in LASER.</p> <p>CO 4 - To measure and compare the dielectric constant of various liquids.</p> <p>CO 5 - To apply Ultrasonic Interferometers to determine the velocity of sound.</p> <p>CO 6 - To analyse the parameters of dielectric crystals experimentally.</p>

339	PP17P2	Practical II - Advanced Physics Lab – II (Programming with C++)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p> <p>PO 5 - To carry out internship programme and research projects to develop scientific skills and</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.)</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 5 - To demonstrate proficiency in analyzing, applying and solving</p>	<p>CO 1 - To understand the basic concept of Object Oriented Programming.</p> <p>CO 2 - To interpret the theoretical formulation for physical phenomena and apply experimental numerical simulations methods to find the solution.</p> <p>CO 3 - To apply computational methods and numerical algorithms to problems in advanced Physics using C++ programming.</p> <p>CO 4 - To develop a basic knowledge in high level programming languages.</p>
340	PP1731	Core VII - Integrated Electronics	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p> <p>PO 5 - To carry out internship programme and research projects to develop scientific skills and</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.)</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 5 - To demonstrate proficiency in analyzing, applying and solving</p>	<p>CO 1 - To understand the basic operation, features and parameters related to diodes, transistor, switching devices and interpret their applications.</p> <p>CO 2 - To explain about the internal circuitry and logic behind any digital system.</p> <p>CO 3 - To assess the working of combinational circuits.</p> <p>CO 4 - To design various synchronous and asynchronous sequential circuits.</p> <p>CO 5 - To understand the characteristics of op-amps and the applications of op-amps.</p> <p>CO 6 - To analyse the behavior of active filters and IC555.</p>
341	PP1732	Core VIII - Microprocessor and Microcontroller	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p> <p>PO 5 - To carry out internship programme and research projects to develop scientific skills and</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.)</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 5 - To demonstrate proficiency in analyzing, applying and solving</p>	<p>CO 1 - To identify/ Explain the operation of various components of the microprocessor 8085.</p> <p>CO 2 - To relate and explain the various addressing modes and the instruction set of 8085 microprocessor.</p> <p>CO 3 - To develop skill in writing simple programs for 8085 microprocessor.</p> <p>CO 4 - To understand the various interrupts of 8085 microprocessor.</p> <p>CO 5 - To experiment with the common applications of microprocessor.</p> <p>CO 6 - To explain the architecture of 8051 microcontroller .</p>
342	PP1733	Elective III – (a) Physics of the Cosmos	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p> <p>PO 5 - To carry out internship programme and research projects to develop scientific skills and innovative.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.)</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 5 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p>	<p>CO 1 - To perceive the historical evolution of solar system and universe.</p> <p>CO 2 - To describe the principles of Physics in the formation of astronomical objects like planets-Satellites – Asteroids and Comets.</p> <p>CO 3 - To examine the requirements and limitations of instrumentation for modern astrophysical observations. (Optical telescopes and Radio telescopes).</p> <p>CO 4 - To explain the basic issues involved in present day astrophysical investigations. (Red shift and the expansion of the universe).</p> <p>CO 5 - To analyse the formation of binary stars, multiple stars, Neutron stars and Black holes.</p>
343	PP1734	Elective III – (b) Radiation Physics	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p> <p>PO 5 - To carry out internship programme and research projects to develop scientific skills and</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.)</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 5 - To demonstrate proficiency in analyzing, applying and solving</p>	<p>CO 1 - To understand the various Radiation sources and its interaction with matter.</p> <p>CO 2 - To understand the Design features of the radiation detectors and the accelerators.</p> <p>CO 3 - To acquire skills and apply it in diagnostic Technology .</p> <p>CO 4 - To interpret the Radiation dosimeter principles.</p> <p>CO 5 - To apply the various radiations in industrial field for scientific development .</p> <p>CO 6 - To identify and apply the radiation for therapy and for diagnosis purposes.</p>
344	PP17P4	Research Project	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p> <p>PO 5 - To carry out internship programme and research projects to develop scientific skills and</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.)</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 5 - To demonstrate proficiency in analyzing, applying and solving</p>	<p>CO 1 - To explore new areas of research in Physics .</p> <p>CO 2 - To analyze a research problem and construct tools for data collection.</p> <p>CO 3 - To write research reports and present results in the scientific community.</p> <p>CO 4 - To develop skills to serve in science related industries and agencies.</p> <p>CO 5 - To develop skills to publish articles in reputed journals.</p>
345	PP17S1	Self Learning Course - Physics for Lectureship Examination – I	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p> <p>PO 5 - To carry out internship programme and research projects to develop scientific skills and</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.)</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 5 - To demonstrate proficiency in analyzing, applying and solving</p>	<p>CO 1 - To familiarize with a range of mathematical methods that are essential for solving advanced problems in theoretical Physics.</p> <p>CO 2 - To model mechanical systems, both in inertial and rotating frames, using Lagrange and Hamilton equations.</p> <p>CO 3 - To gain insight into the physical nature of electric and magnetic phenomena.</p> <p>CO 4 - To use quantum mechanical principles to analyze advanced Physical phenomena of nature.</p> <p>CO 5 - To understand the theory and methods of statistical Physics and thermodynamics.</p>
346	PP1741	Core IX – Material Science	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p> <p>PO 5 - To carry out internship programme and research projects to develop scientific skills and</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.)</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 5 - To demonstrate proficiency in analyzing, applying and solving</p>	<p>CO 1 - To understand phase diagrams and relate to the design and control of heat treating procedures.</p> <p>CO 2 - To analyze the elastic behavior of materials.</p> <p>CO 3 - To recognize the nature of dislocations in materials and the role they play in the deformation processes.</p> <p>CO 4 - To review the mechanisms involved in oxidation and corrosion of materials.</p> <p>CO 5 - To compare the different types of composites to design materials having property combinations that are better than those found in the metal alloys, ceramics and polymeric materials.</p>

347	PP1742	Core X - Nuclear and Particle Physics		<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p> <p>PO 5 - To carry out internship programme and research projects to develop scientific skills and</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.)</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 5 - To demonstrate proficiency in analyzing, applying and solving</p>	<p>CO 1 - To understand the properties of Nuclear forces and outline their behavioral formulation.</p> <p>CO 2 - To interpret the behavior and properties of the deuteron in the ground and excited state.</p> <p>CO 3 - To analyze the different nuclear models of the nucleus and examine the application of the shell model of nucleus.</p> <p>CO 4 - To explain the characteristics and effect of radioactive decay phenomena.</p> <p>CO 5 - To discuss the outcome of various types of nuclear reactions.</p> <p>CO 6 - To analyse the working of nuclear reactors.</p> <p>CO 7 - To examine the Particle Physics phenomena and their</p>
348	PP1743	Core XI - Molecular Spectroscopy		<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p> <p>PO 5 - To carry out internship programme and research projects to develop scientific skills and</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.)</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 5 - To demonstrate proficiency in analyzing, applying and solving</p>	<p>CO 1 - To apply basic spectroscopic techniques.</p> <p>CO 2 - To infer basic spectroscopic techniques.</p> <p>CO 3 - To understand the molecular interactions in different spectroscopic methods.</p> <p>CO 4 - To analyze the characteristics of rotational spectra and vibrational energy of diatomic molecules.</p> <p>CO 5 - To design spectrometers (Microwave, IR, Raman and NMR) for characterization of molecules.</p> <p>CO 6 - To utilize various spectroscopic methods suitable for characterizing a molecule .</p>
349	PP1751	Physics for Lectureship Examination - I		<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p> <p>PO 5 - To carry out internship programme and research projects to develop scientific skills and</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.)</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 5 - To demonstrate proficiency in analyzing, applying and solving</p>	<p>CO 1 - To familiarize with a range of mathematical methods that are essential for solving advanced problems in theoretical Physics.</p> <p>CO 2 - To model mechanical systems, both in inertial and rotating frames, using Lagrange and Hamilton equations.</p> <p>CO 3 - To gain insight into the physical nature of electric and magnetic phenomena.</p> <p>CO 4 - To use quantum mechanical principles to analyze advanced Physical phenomena of nature.</p> <p>CO 5 - To understand the theory and methods of statistical Physics and thermodynamics.</p>
350	PP1744	Elective IV – (a) Nano Physics		<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p> <p>PO 5 - To carry out internship programme and research projects to develop scientific skills and innovative ideas.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.)</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 5 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p>	<p>CO 1 - To identify how basic Physics can be used to describe the behaviour of electrons in nano-scale materials.</p> <p>CO 2 - To explain the variation in the density of states in nanostructures for different dimensions.</p> <p>CO 3 - To analyze magneto electronics and applications of Nanotechnology in various fields.</p> <p>CO 4 - To explain Laser effect in Quantum well, Quantum wires & quantum dots.</p> <p>CO 5 - To compare the structure and properties of Carbon allotropes and their applications in the emerging nano technology.</p> <p>CO 6 - To discuss the applications of Quantum Hetro structures and super lattices.</p> <p>CO 7 - To develop key concepts in Single electron transistor.</p>
351	PP1745	Elective IV – (b) Quantum Field Theory		<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p> <p>PO 5 - To carry out internship programme and research projects to develop scientific skills and</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.)</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 5 - To demonstrate proficiency in analyzing, applying and solving</p>	<p>CO 1 - To explain the need for a classical theoretical approach to quantum theory.</p> <p>CO 2 - To interpret combinations in different phases of field theories characteristics by patterns of symmetric breaking.</p> <p>CO 3 - To examine the significance of Neopher's theorem.</p> <p>CO 4 - To solve problems based on Feynman diagrams.</p> <p>CO 5 - To solve problems based on Feynman diagrams.</p> <p>CO 6 - To understand the concepts of field quantization.</p> <p>CO 7 - To design calculation techniques for quantum electrodynamics.</p> <p>CO 8 - To survey the quantization around non perturbative solutions of quantum field theory.</p>
352	PP17P3	Practical III - Advanced Physics Lab – III (Electronics)		<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p> <p>PO 5 - To carry out internship programme and research projects to develop scientific skills and</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.)</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 5 - To demonstrate proficiency in analyzing, applying and solving</p>	<p>CO 1 - To analyse the working of code converters.</p> <p>CO 2 - To design various synchronous and asynchronous sequential circuits and study their working.</p> <p>CO 3 - To analyse the applications of op- amps.</p> <p>CO 4 - To analyse the behavior of counters.</p> <p>CO 5 - To analyse the working of electronic circuits.</p>
353	PP17P4	Practical IV – Advanced Physics Lab – IV (Microprocessor and Micro Controller)		<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p> <p>PO 5 - To carry out internship programme and research projects to develop scientific skills and</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.)</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 5 - To demonstrate proficiency in analyzing, applying and solving</p>	<p>CO 1 - To experiment with assembly language programming on 8085 microprocessor.</p> <p>CO 2 - To apply assembly language programming on microprocessor.</p> <p>CO 3 - To analyse the interfacing of microprocessor 8085 with I/O devices.</p> <p>CO 4 - To apply assembly language programs for 8051 microcontroller.</p>
354	PP17S2	Self Learning Course - Physics for Lectureship Examination - II		<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p> <p>PO 5 - To carry out internship programme and research projects to develop scientific skills and</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.)</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 5 - To demonstrate proficiency in analyzing, applying and solving</p>	<p>CO 1 - To understand the physical construction, working and operational characteristics of semiconductor devices.</p> <p>CO 2 - To attain knowledge on the structure and dynamics of the molecules through various theories.</p> <p>CO 3 - To develop analytical thinking to understand the phenomenon that decide various properties of solids.</p> <p>CO 4 - To know the scientific, environmental and technological applications of nuclear Physics.</p> <p>CO 5 - To study the fundamentals of wave mechanics.</p>

355	MPP191	C1:Professional Skills for Teaching – Learning		<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p> <p>PO 5 - To carry out internship programme and research projects to develop scientific skills and</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.)</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 5 - To demonstrate proficiency in analyzing, applying and solving</p>	<p>CO 1 - To acquire practical skills aiming at gaining confidence to handle practical classes.</p> <p>CO 2 - To develop teaching skills and gain confidence in teaching.</p>
356	MPP182	C2:ResearchMethodology		<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p> <p>PO 5 - To carry out internship programme and research projects to develop scientific skills and</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.)</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 5 - To demonstrate proficiency in analyzing, applying and solving</p>	<p>CO 1 - To assess the fundamentals of thin film preparation and characterize thin film in terms of its optical, electrical, magnetic and mechanical properties.</p> <p>CO 2 - To understand the basic concepts of research and its methodologies of scholarly writing and evaluate its quality.</p> <p>CO 3 - To solve partial differential equations and special function of mathematical Physics.</p> <p>CO 4 - To demonstrate an understanding of the basic features and concepts of the Sun and other stars.</p> <p>CO 5 - To examine the fundamental principles, theories and applications of photonic crystals.</p>
357	MPP183	C3:Advanced Physics		<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p> <p>PO 5 - To carry out internship programme and research projects to develop scientific skills and</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.)</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 5 - To demonstrate proficiency in analyzing, applying and solving</p>	<p>CO 1 - To interpret the band structure of metals, semiconductors and insulators.</p> <p>CO 2 - To understand the structure, preparation methods and applications of high temperature cuprate superconductors.</p> <p>CO 3 - To describe the various crystal growth techniques and determine the growth parameters of crystals.</p> <p>CO 4 - To categorize different types of sensors and their characteristics.</p>
358	MPP184	Principles and Methods of Crystal Growth		<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p> <p>PO 5 - To carry out internship programme and research projects to develop scientific skills and</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.)</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 5 - To demonstrate proficiency in analyzing, applying and solving</p>	<p>CO 1 - To categorize the various crystal growth methods.</p> <p>CO 2 - To understand the various theories of nucleation process involved in crystal growth</p> <p>CO 3 - To discuss the theories of crystal growth and familiarize in choosing an apt method for growing materials</p> <p>CO 4 - To discuss the methods of melt growth technique for both conventional and non-conventional growth processes</p> <p>CO 5 - To compile the various crystal growth techniques</p>
359	MPP185	C4: Research Trends in Nano science and Technology		<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p> <p>PO 5 - To carry out internship programme and research projects to develop scientific skills and</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.)</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 5 - To demonstrate proficiency in analyzing, applying and solving</p>	<p>CO 1 - To list the basic properties of nanoparticles.</p> <p>CO 2 - To explain the technique involved in measuring different properties of nanoparticles</p> <p>CO 3 - To apply different methods used to control the structure of nanoparticles</p> <p>CO 4 - To explain the characteristics and behaviour of nanoparticles in dispersed system</p> <p>CO 5 - To utilise different characterisation methods to estimate physical properties of nanoparticles</p>
360	MPP186	C4: Electronic Structure Calculations for Solids		<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p> <p>PO 5 - To carry out internship programme and research projects to develop scientific skills and innovative ideas.</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.)</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 5 - To demonstrate proficiency in analyzing, applying and solving scientific problems.</p>	<p>CO 1 - To identify the eigen values and eigen functions of materials using theoretical calculations.</p> <p>CO 2 - To discuss the probability of occupancy of an electron in an energy state at various pressures by electronic structure calculation.</p> <p>CO 3 - To analyse the crystal parameters to investigate electronic and structural phase transition in crystalline materials.</p> <p>CO 4 - To apply the FP-LMTO method in the Basic theories of electronic structure</p> <p>CO 5 - To explain the phenomenon of Metallization, superconductivity and Fermi surface in materials.</p> <p>CO 6 - To compare the various band structure methods suitable for metals, semiconductors and insulators using recent reprints</p> <p>CO 7 - To develop a deeper research experience in electronic</p>
361	MPP19D			<input checked="" type="checkbox"/>	<p>PO 1 - To recognize the scientific facts behind natural phenomena.</p> <p>PO 2 - To relate the theory and practical knowledge to solve the problems of the society.</p> <p>PO 3 - To prepare successful professionals in industry, government, academia, research, entrepreneurial pursuits and consulting firms.</p> <p>PO 4 - To face and succeed in high level competitive examinations like NET, GATE and TOFEL.</p> <p>PO 5 - To carry out internship programme and research projects to develop scientific skills and</p>	<p>PSO 1 - To have well-defined knowledge on theoretical concepts and experimental methods of advanced Physics (Classical Mechanics, Mathematical Physics, Quantum Mechanics, Solid State Physics, Molecular Spectroscopy, Integrated Electronics, AstroPhysics, NanoPhysics, Microprocessor etc.)</p> <p>PSO 2 - To acquire skills in performing advanced Physics experiments and projects using modern technology and numerical simulations.</p> <p>PSO 3 - To develop and communicate analytical skills ranging from nuclear to cosmology to progress in the expanding frontiers of Physics.</p> <p>PSO 4 - To apply and interpret Physics principles in various physical observations.</p> <p>PSO 5 - To demonstrate proficiency in analyzing, applying and solving</p>	<p>CO 1 - To explore new areas of research in Physics</p> <p>CO 2 - To analyze a research problem and construct tools for data collection.</p> <p>CO 3 - To write research reports and present results in the scientific community.</p> <p>CO 4 - To develop skills to serve in science related industries and agencies.</p> <p>CO 5 - To develop skills to publish articles in reputed journals.</p>