3.7.1 Number of functional MoUs/linkages with institutions/ industries in India and abroad for internship, on-the-job training, project work, student / faculty exchange and collaborative research during 2021-2022

DEPARTMENT OF MATHEMATICS AIDED

1. **Research Collaboration - Doctoral Committee Member**

a. Women's Christian College, Nagercoil

MANONMANIAM SUNDARANAR UNIVERSITY
CENTRE FOR RESEARCH
ABISHEKAPATTI, TIRUNELVELI – 627 012, TAMIL NADU, INDIA

MINUTES OF THE DOCTORAL COMMITTEE MEETING FOR CONFIRMATION OF PROVISIONAL REGISTRATION

The Doctoral Committee Meeting of the Ph.D. Scholar, Mr./Ms. P. C. Priyanka Nair (Reg.No. 19213064092007) (Full-Time / Part-Time) was held on 18/08/2021 at 12 A.M./P.M. in the Department/Institution of Zoom Platform

The following members were present

1. Dr. T Anitha Baby (Supervisor & Convener)
2. (Joint Supervisor)
3. Dr. C. Nirmala Kumari (Member 1)
4. Dr. M.K. Angel Jebitha (Member 2)

Mr./Ms. P.C. Priyanka Nair has successfully completed the following course works recommended by the Doctoral Committee. He/She has obtained the following grades in the course works.

Sl. No	Course Code	Course title	Credits	Category	Grade / Marks
1	[illegible]	BANACH ALGEBRA & SPECTRAL THEORY		Coursework	O
2	[illegible]	ADVANCED CALCULUS		Coursework	O
3					
4					
				CGPA	

OF PROVISIONAL REGISTRATION

P.C. Priyanka Nair

The scholar had completed the first seminar presentation on 18/08/2021 to the faculty members and research scholars. The questions list is enclosed herewith. The committee also evaluated the research work carried out by the scholar and satisfied / not satisfied with the performance of the scholar. Hence the Committee recommends / not recommends the confirmation of Provisional registration of the scholar in the Faculty of Mathematics, and permits / not permits the scholar to proceed with his/her research work.

Member
(Signature with Name and Seal)
Dr. C. Nirmala Kumari, M.Sc.
Associate Professor (Rtd)

Dr. M.K. ANGEL JEBITHA, Member
Assistant Professor
Department of Mathematics
Holy Cross College (Autonomous)
Nagercoil - 629 004
(Signature with Name and Seal)

Supervisor
Assistant Professor
Department of Mathematics

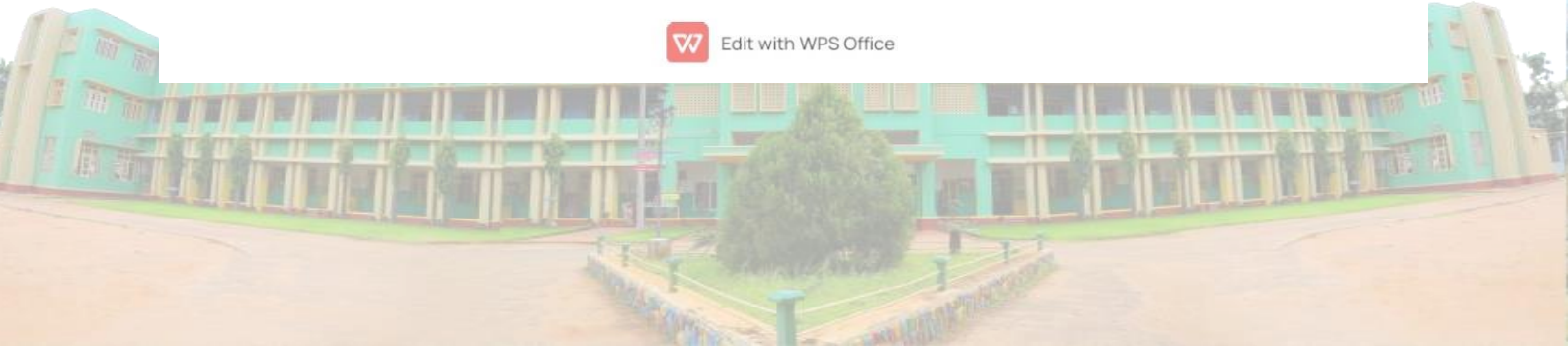
(Signature with Name and Seal) (If applicable)

2. Research Collaboration - Doctoral Committee Member

b. T. D. M. N College, T. Kalikulam, Tirunelveli

HOLY CROSS COLLEGE(AUTONOMOUS),NAGERCOIL
PG AND RESEARCH DEPARTMENT OF MATHEMATICS
Notification
Second Doctoral Committee Meeting

Name ofthe Scholar	: S.L.Sumi
Register Number	: 20123042092007
Category of registration	: Full time - Internal
Discipline	: Mathematics
Title.	: Cototal Domination Concepts in Graphs
Platform	: GoogleMeet
MeetingLink.	:https://meet.google.com/jxi-xzza-tnn
Date and Time.	: 31.08.2021,6.00pm to 6.30pm
Name and address of the supervisor	: Dr.V.Mary Gleeta Assistant Professor, Department of Mathematics , T.D.M.N.S College T.Kallikulam-627113 Tirunelveli
Name and address of the Joint supervisor.	: Dr.J.Befija Minnie Assistant Professor, Department of Mathematics , Holy Cross College (Autonomous) Nagercoil.
Doctoral Committee Members	: 1. Dr.V.Sujin Flower Assistant Professor, Department of Mathematics , Holy Cross College (Autonomous) Nagercoil. 2.Dr.S.Chandra Kumar Associate Professor Department of Mathematics Scott Christian College , Nagercoil



3. Research Collaboration - Doctoral Committee Member

a. Scott Christian College (Autonomous), Nagercoil

From

Dr. T. Binu Selin (Supervisor)
Assistant Professor,
Department of Mathematics,
Scott Christian College (Autonomous),
Nagercoil – 629003.

To

The Principal
Scott Christian College (Autonomous),
Nagercoil – 629003.

Through

The Head of the Department,
Scott Christian College(Autonomous),
Nagercoil – 629003.

Respected Sir,

Sub: Intimation for conducting Second Doctoral Committee Meeting– Reg

Ref: MSU/RES/Admn/ January 2020 dated 09.03.2020

This is to your kind information that as per the directions given by M.S.University, Centre for Research, it is proposed to conduct the Second Doctoral Committee Meeting with consent from all DC members for the candidates Sinju Manohar.V.S (Full-Time, Reg.No. 20113162092016) on 31.08.2021, at 12.00 pm through online mode. Kindly make it convenient to attend the meeting.

(google meet link https://meet.google.com/ezd-noyi-nao)

Thanking you.

Place: Nagercoil

Yours Sincerely,

Date: 31/08/2021

(Dr. T. Binu Selin)

Dr. T. Binu Selin, M.Sc.,M.Phil.,B.Ed.,Ph.D.,
Assistant Professor
PG & Research Department of Mathematics
Scott Christian College (Autonomous)
Nagercoil - 629 003

Copy To: 1. Dr. Y.S.Irine Sheela (Doctoral Committee Member), Head of the Department of Mathematics, Scott Christian College (Autonomous), Nagercoil.
2. Dr. M.K.Angel Jebitha (Doctoral Committee Member), Assistant Professor, Holy Cross College (Autonomous), Nagercoil.

4. Research Collaboration - Doctoral Committee Member

a. Government College for Engineering, Tirunelveli

HOLYCROSSCOLLEGE(AUTONOMOUS),NAGERCOIL

PG AND RESEARCH DEPARTMENT OF MATHEMATICS

DOCTORAL MEETING-II
NOTIFICATION

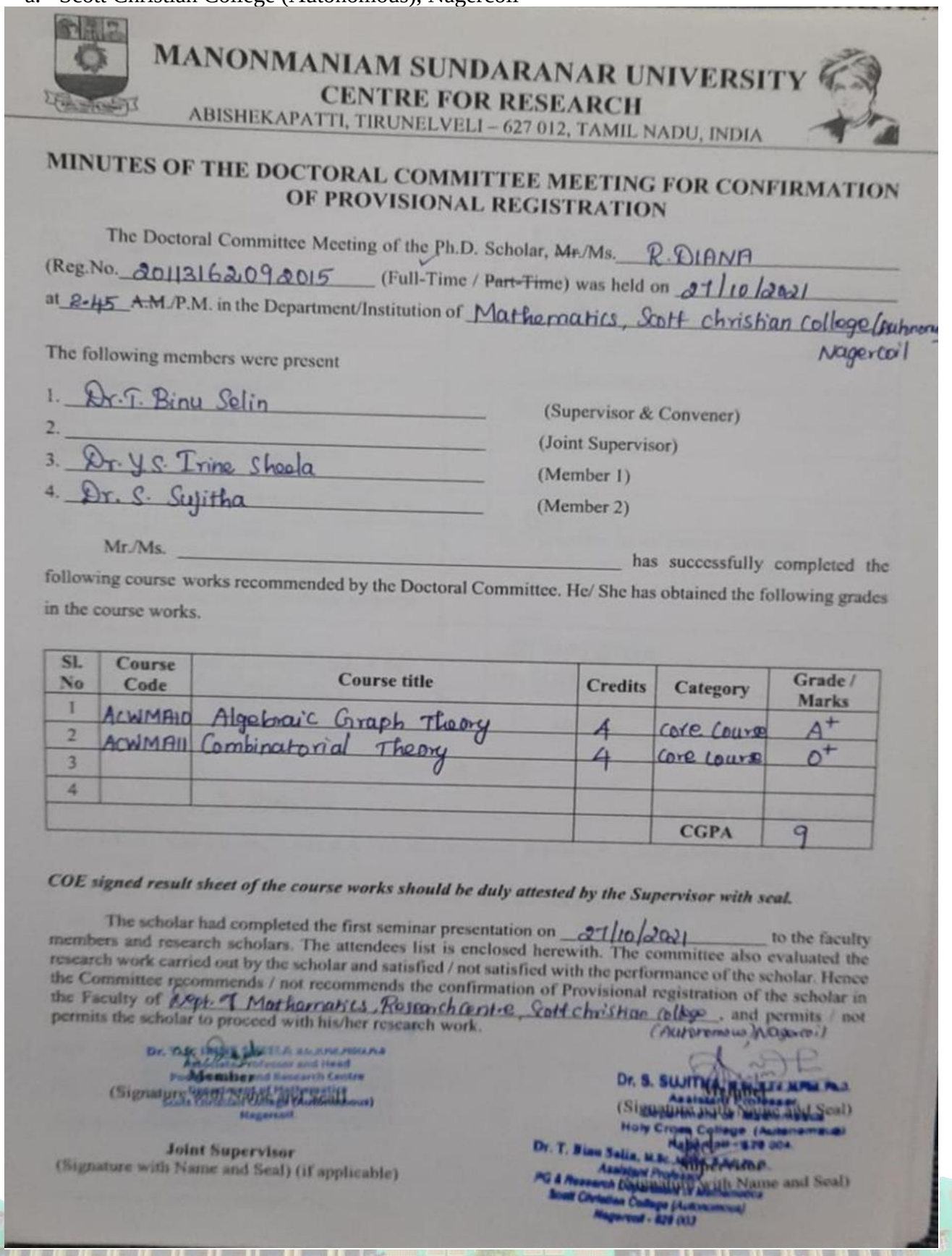
Name of the Scholar	: V.Selvi
Register Number	: 20123042092008
Category of registration	: Part time - External
Discipline	: Mathematics
Title.	: Monophonic Global Domination Number of a Graph
Date and time	: 06.09.2021, 2.00 P.M
Platform	: Google Meet
Meeting Link	:https://meet.google.com/wkq-ezaa-maz
Name and address of the supervisor	: Dr.V.Sujin Flower Assistant Professor, Department of Mathematics , Holy Cross College (Autonomous) Nagercoil.
Doctoral Committee Members	: 1. Dr.K.Jeya Daisy Assistant Professor Department of Mathematics Holy Cross College (Autonomous)Nagercoil. 2.Dr.J.John Associate Professor & Head Department of Mathematics Government College for Engineering, Tirunelveli

Dr. V. M. Arul Flower Mary
Head
Department of Mathematics
Holy Cross College
NAGERCOIL

V. Sujin Flower
Dr. V.SUJIN FLOWER, M.Sc., M.Phil., Ph.D.,
Assistant Professor,
Department of Mathematics,
Holy Cross College (Autonomous)
Nagercoil - 629004.

5. Research Collaboration - Doctoral Committee Member

a. Scott Christian College (Autonomous), Nagercoil



MANONMANIAM SUNDARANAR UNIVERSITY
CENTRE FOR RESEARCH
ABISHEKAPATTI, TIRUNELVELI – 627 012, TAMIL NADU, INDIA

MINUTES OF THE DOCTORAL COMMITTEE MEETING FOR CONFIRMATION OF PROVISIONAL REGISTRATION

The Doctoral Committee Meeting of the Ph.D. Scholar, ~~Mr./~~Ms. R. DIANA
(Reg.No. 20113162092015 (Full-Time / ~~Part-Time~~) was held on 27/10/2021
at 2.45 ~~A.M./~~P.M. in the Department/Institution of Mathematics, Scott christian College (Autonomous) Nagercoil

The following members were present

1. Dr. T. Binu Selin (Supervisor & Convener)
2. _____ (Joint Supervisor)
3. Dr. Y.S. Irine Sheela (Member 1)
4. Dr. S. Sujitha (Member 2)

Mr./Ms. _____ has successfully completed the following course works recommended by the Doctoral Committee. He/ She has obtained the following grades in the course works.

Sl. No	Course Code	Course title	Credits	Category	Grade / Marks
1	ACWMA10	Algebraic Graph Theory	4	Core Course	A+
2	ACWMA11	Combinatorial Theory	4	Core Course	O+
3					
4					
				CGPA	9

COE signed result sheet of the course works should be duly attested by the Supervisor with seal.

The scholar had completed the first seminar presentation on 27/10/2021 to the faculty members and research scholars. The attendees list is enclosed herewith. The committee also evaluated the research work carried out by the scholar and satisfied / not satisfied with the performance of the scholar. Hence the Committee recommends / not recommends the confirmation of Provisional registration of the scholar in the Faculty of Dept. of Mathematics, Research Centre, Scott christian College (Autonomous) Nagercoil, and permits / not permits the scholar to proceed with his/her research work.

Member
(Signature with Name and Seal)

Dr. S. SUJITHA
Assistant Professor
Holy Cross College (Autonomous)

Joint Supervisor
(Signature with Name and Seal) (if applicable)

Dr. T. Binu Selin
Assistant Professor
PG & Research Department of Mathematics
Scott Christian College (Autonomous)
Nagercoil - 629 003

(Signature with Name and Seal)

6. Research Collaboration - Doctoral Committee Member

a. Malankara Catholic College, Marigiri

HOLY CROSS COLLEGE (AUTONOMOUS), NAGERCOIL

PG AND RESEARCH DEPARTMENT OF MATHEMATICS

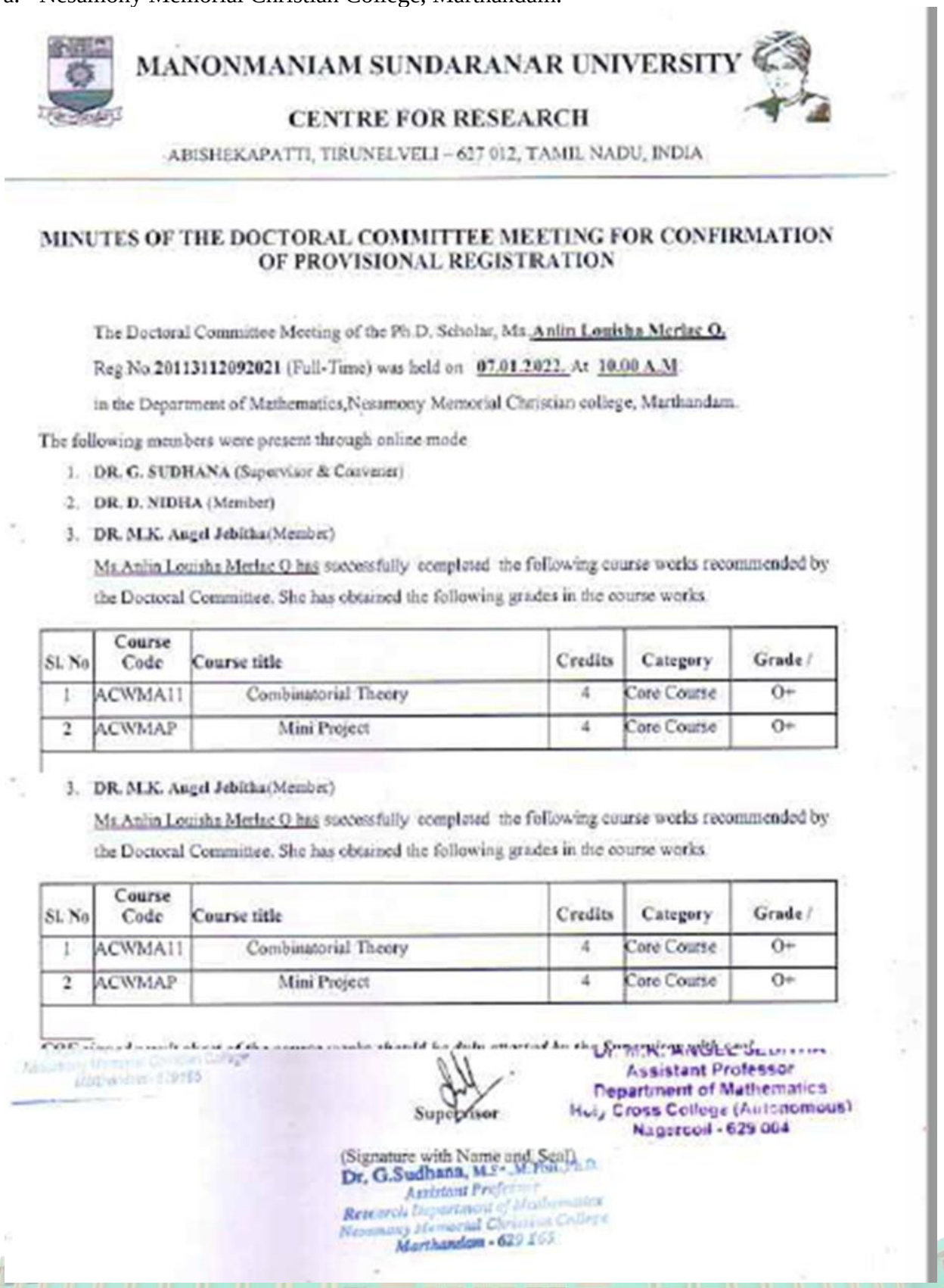
Notification

Third Doctoral Committee Meeting

Name of the Scholar	: Victoria Jayafin Nisha S L
Register Number	: 19123042092002
Category of Registration	: Part Time – Internal
Title	: Minimum Dominating Energy of Graphs
Platform	: Google Meet
Meeting Link	: https://meet.google.com/dpi-qzmy-div
Date and Time	: 24.11.2021 and 12.00 pm to 1.00 pm
Name and address of the Supervisor	: Dr.V.M.Arul Flower Mary, Associate Professor, Department Of Mathematics Holy Cross College (Autonomous), Nagercoil.
Doctoral Committee Members	: 1. Dr.S.Sujitha, Assistant Professor, Department Of Mathematics Holy Cross College (Autonomous), Nagercoil. 2. Dr.C.David Raj, Assistant Professor, Department Of Mathematics Malankara Catholic College, Mariagiri.

7. Research Collaboration - Doctoral Committee Member

a. Nesamony Memorial Christian College, Marthandam.



MANONMANIAM SUNDARANAR UNIVERSITY

CENTRE FOR RESEARCH

ABISHEKAPATTI, TIRUNELVELI – 627 012, TAMIL NADU, INDIA

MINUTES OF THE DOCTORAL COMMITTEE MEETING FOR CONFIRMATION OF PROVISIONAL REGISTRATION

The Doctoral Committee Meeting of the Ph.D. Scholar, Ms. Anlin Louisha Merlac Q,

Reg No **20113112092021** (Full-Time) was held on 07.01.2022 At 10.00 A.M

in the Department of Mathematics,Nesamony Memorial Christian college, Marthandam.

The following members were present through online mode

1. **DR. G. SUDHANA** (Supervisor & Convener)
2. **DR. D. NIDHA** (Member)
3. **DR. M.K. Angel Jebitha**(Member)

Ms.Anlin Louisha Merlac Q has successfully completed the following course works recommended by the Doctoral Committee. She has obtained the following grades in the course works

Sl. No	Course Code	Course title	Credits	Category	Grade /
1	ACWMA11	Combinatorial Theory	4	Core Course	O+
2	ACWMAP	Mini Project	4	Core Course	O+

3. **DR. M.K. Angel Jebitha**(Member)

Ms.Anlin Louisha Merlac Q has successfully completed the following course works recommended by the Doctoral Committee. She has obtained the following grades in the course works

Sl. No	Course Code	Course title	Credits	Category	Grade /
1	ACWMA11	Combinatorial Theory	4	Core Course	O+
2	ACWMAP	Mini Project	4	Core Course	O+

Supervisor

(Signature with Name and Seal)

Dr. G.Sudhana, M.Sc., M.Phil., Ph.D.
Assistant Professor
Research Department of Mathematics
Nesamony Memorial Christian College
Marthandam - 629 165

Dr. M.K. ANGEL JEBITHA
Assistant Professor
Department of Mathematics
Holy Cross College (Autonomous)
Nagercoil - 629 004

8. Research Collaboration - Doctoral Committee Member

a. Scott Christian College (Autonomous), Nagercoil

HOLY CROSS COLLEGE (AUTONOMOUS), NAGERCOIL

PG AND RESEARCH DEPARTMENT OF MATHEMATICS

Notification

First Doctoral Committee Meeting

Name of the scholar	:	RENISA P
Register number	:	21213042092003
Category of Registration	:	Full-Time Interval
Title	:	A Study On Marker Set Distance of a Graph
Platform	:	Google Meet
Meeting Link	:	https://meet.google.com/otu-zfvr-kcv
Date and Time	:	09.02.2022 and 2.00 pm to 3.00 pm
Name and address Of the supervisor	:	Dr.S.Sujitha, Assistant Professor, Department of Mathematics, Holy Cross College (Autonomous), Nagercoil.
Doctoral Committee Members	:	1. Dr.M.K.Angel Jebitha, Assistant Professor, Department of Mathematics, Holy Cross College (Autonomous), Nagercoil. 2. Dr.T.Binu Selin, Assistant Professor, Department of Mathematics, Scott Christian College(Autonomous), Nagercoil.

9. Research Collaboration - Doctoral Committee Member

a. Noorul Islam Centre for Higher Education, Kumaracoil

MANONMANIAM SUNDARANAR UNIVERSITY
CENTRE FOR RESEARCH
ABISHEKAPATTI, TIRUNELVELI – 627 012, TAMIL NADU, INDIA

MINUTES OF THE FIRST DOCTORAL COMMITTEE MEETING

The Doctoral Committee Meeting of the Ph.D. Scholar ~~Mr.~~/Ms. Divinelin Kumari. R (Reg. No. 2121304 2092002) was held on 10.02.2022 at 2.30 ~~A.M.~~ /P.M. in the Department of Mathematics, Holy Cross College (Autonomous), Nagercoil.

The following members were present:

1. Dr.M.K. Angel Jebitha (Supervisor & Convener)
2. _____ (Joint Supervisor, if applicable)
3. Dr. A. Jancy Vini (Member)
4. Dr. J. John Arul Singh (Member)

Mr./Ms. DIVINELIN KUMARI. R has presented the overview of the proposed research work. The Doctoral Committee has approved the research topic as "A STUDY ON DOM - CHROMATIC NUMBER OF GRAPHS".

The Committee has recommended the scholar to undertake the following course works.

Course Code	Course Title	Core Course / Special Elective
ACWMA12	Advanced Domination Theory in Graphs	Core Course
ACWCRP	Research and Publication Ethics	Core Course
ACWMAP	Mini Project	Core Course

Number of course works as applicable to the scholars : 3

Jancy vini

Dr. A. JANCY VINI, M.Sc.,M.Phil., SET.,Ph.D.
Asst. Professor, Dept. of Mathematics
Holy Cross College (Autonomous)
Nagercoil-629 004
Member
(Signature with Name and seal)

Dr. J. John Arul Singh
Assistant Professor
Department of Mathematics
Noorul Islam Centre for Higher Education
Kumaracoil - 629180
Member
(Signature with Name and seal)

Joint Supervisor
(Signature with Name and seal)
(if applicable)

Supervisor
(Signature with name and seal) Dr. M.K. ANGEL JEBITHA
Assistant Professor
Department of Mathematics
Holy Cross College (Autonomous)
Nagercoil - 629 004

Forwarded
Signature of the HOD/Director of the Center/Principal of the institution where the supervisor is working

Holy Cross College
(Autonomous)
Nagercoil - 629 004.

10. Research Collaboration - Doctoral Committee Member

a. Scott Christian College (Autonomous), Nagercoil

MANONMANIAM SUNDARANAR UNIVERSITY
CENTRE FOR RESEARCH
ABISHEKAPATTI, TIRUNELVELI – 627 012, TAMIL NADU, INDIA

MINUTES OF THE FIRST DOCTORAL COMMITTEE MEETING

The Doctoral Committee Meeting of the Ph.D. Scholar Mr./Ms. ASLIN JENIFER S (Reg. No. 212230420920004) was held on 11.02.2022 at 11.00 A.M. / P.M. in the Department of Mathematics, Holy Cross College (Autonomous), Nagercoil.

The following members were present.

1. Dr M.K. Angel Jebitha (Supervisor & Convener)
2. _____ (Joint Supervisor, if applicable)
3. Dr. K. Jal Gipson (Member)
4. Dr. S. Sujitha (Member)

Mr./Ms. ASLIN JENIFER S has presented the overview of the proposed research work. The Doctoral Committee has approved the research topic as "A Study on Total Coloring of Graphs".

The Committee has recommended the scholar to undertake the following course works.

Course Code	Course Title	Core Course / Special Elective
ACWMA04	Advanced Graph Theory	Core Course
ACWMAP	Mini Project	Core Course
ACWCRP	Research and Publication Ethics	Core Course

Number of course works as applicable to the scholars (3)

Dr S SUJITHA, M.Sc. B.Ed. M.Phil. Ph.D
Assistant Professor
Department of Mathematics
Holy Cross College (Autonomous)
Nagercoil - 629 004.
Member
(Signature with Name and seal)

Member
Dr. K. JAL GIPSON
Assistant Professor
Department of Mathematics & Research Centre
Scott Christian College (Autonomous)
Nagercoil - 629 003
(Signature with Name and seal)
(if applicable)

Supervisor
Dr. M.K. ANGEL JEDITHA
Assistant Professor
Department of Mathematics
Holy Cross College (Autonomous)
Nagercoil - 629 004
(Signature with name and seal)

Forwarded
Signature of the HOD/Director of the Center/Principal of the institution where the supervisor is working

11. Research Collaboration - Doctoral Committee Member

a. Govindammal Aditanar Women's College, Tiruchedur

MANONMANIAM SUNDARANAR UNIVERSITY
CENTRE FOR RESEARCH
ABISHEKAPATTI, TIRUNELVELI – 627 012, TAMIL NADU, INDIA

MINUTES OF THE DOCTORAL COMMITTEE MEETING FOR CONFIRMATION OF PROVISIONAL REGISTRATION

The Doctoral Committee Meeting of the Ph.D. Scholar, Mr./Ms. R. SANTRIN SABIBHA (Reg.No. 20218072092001) (Full-Time / ~~Part-Time~~) was held on 28-02-2022 at 11 A.M./~~P.M.~~ in the Department/Institution of online mode - Google Meet (http://meet.google.com/hjn-hmbm-bmp).

The following members were present

1. Dr. P. JEYANTHI (Supervisor & Convener)
2. _____ (Joint Supervisor)
3. Dr. M. KALAISELVI (Member 1)
4. Dr. L. JESMALAR (Member 2)

Mr./Ms. R. SANTRIN SABIBHA has successfully completed the following course works recommended by the Doctoral Committee. He/ She has obtained the following grades in the course works.

Sl. No	Course Code	Course title	Credits	Category	Grade / Marks
1	ACWMA01	Commutative Algebra			A+
2	ACWMA02	Advanced Analysis			O
3	ACWMA03	Banach Algebra and Spectral Theory			O
4	ACWMA04	Advanced Graph Theory			A+
				CGPA	

COE signed result sheet of the course works should be duly attested by the Supervisor with seal.

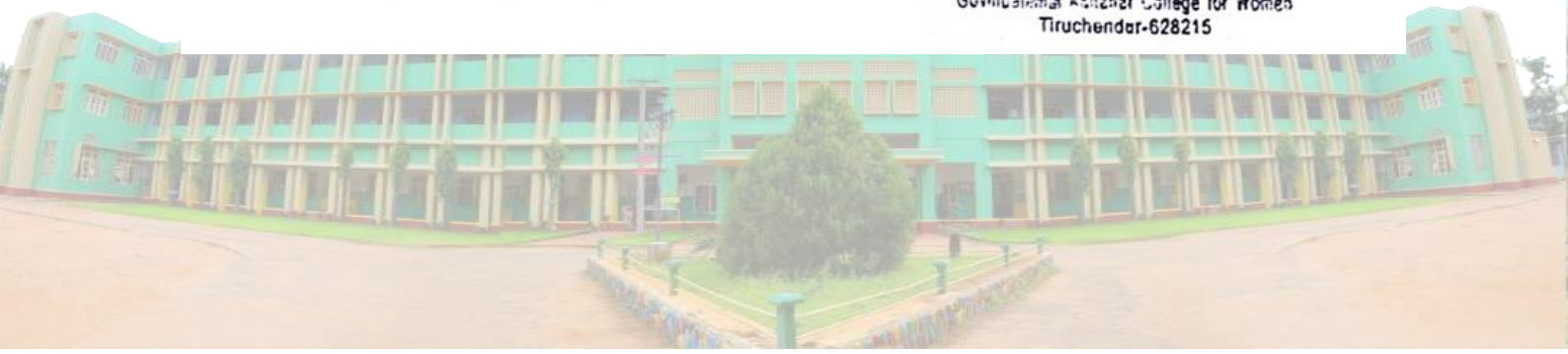
The scholar had completed the first seminar presentation on 26-02-2022 to the faculty members and research scholars. The attendees list is enclosed herewith. The committee also evaluated the research work carried out by the scholar and satisfied / not satisfied with the performance of the scholar. Hence the Committee recommends / not recommends the confirmation of Provisional registration of the scholar in the Faculty of Mathematics, and permits / not permits the scholar to proceed with his/her research work.

Member
M. KALAISELVI M.Sc., M.Phil., Ph.D.,
(Signature with Name and Seal)
Associate Professor,
Department of Mathematics,
Govindammal Aditanar College for Women,
Tiruchendur-628 215.

Joint Supervisor
(Signature with Name and Seal) (if applicable)

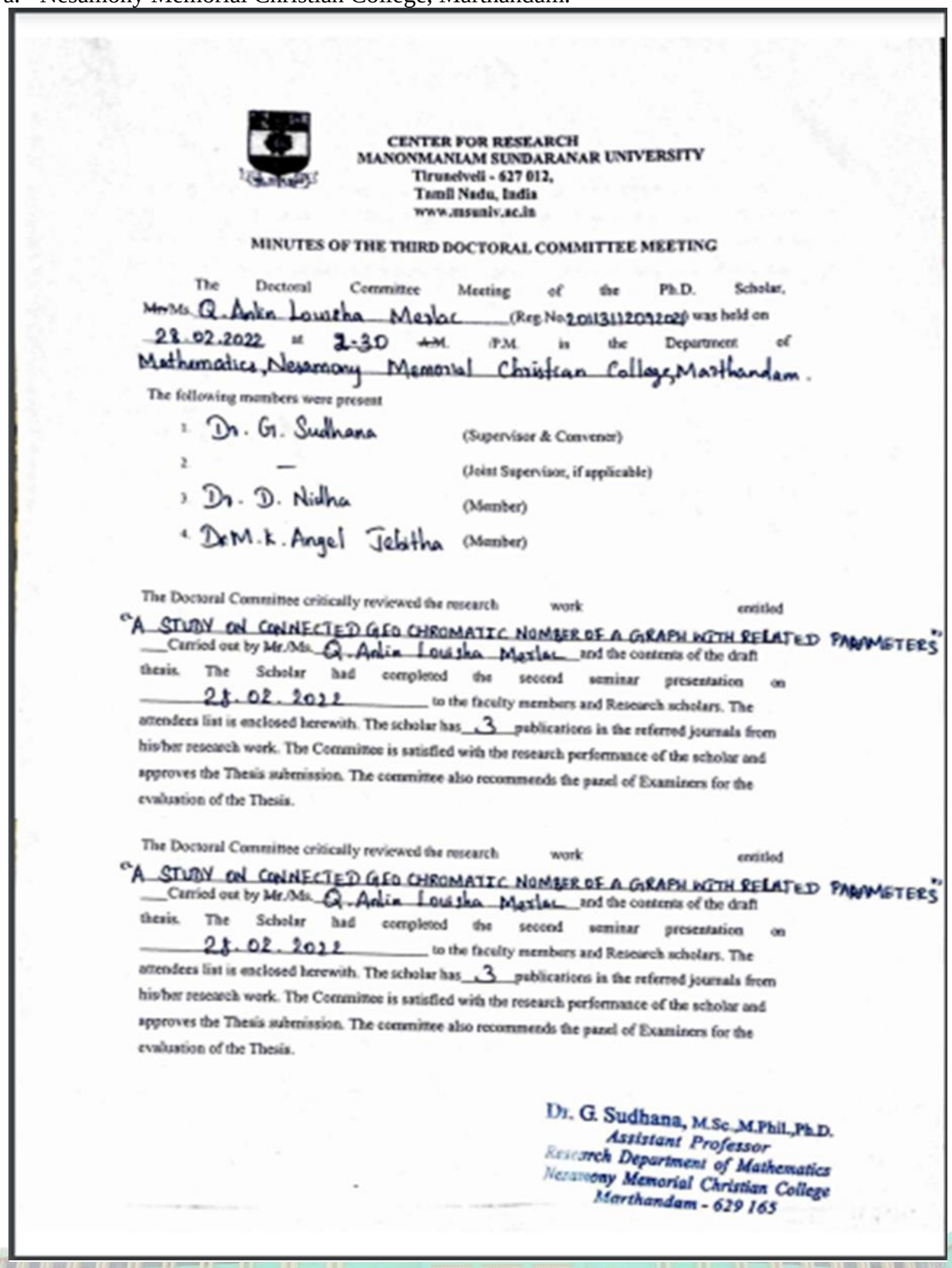
Dr. L. JESMALAR
Assistant Professor
Department of Mathematics
Holy Cross College (Autonomous)
Nagercoil - 629 004
(Signature with Name and Seal)

Supervisor
Dr P. Jeyanthi M.Sc., M.Phil., Ph.D.,
Principal and Head
Research Department of Mathematics
Govindammal Aditanar College for Women
Tiruchendur-628215



12. Research Collaboration - Doctoral Committee Member

a. Nesamony Memorial Christian College, Marthandam.



CENTER FOR RESEARCH
MANONMANIAM SUNDARANAR UNIVERSITY
Tirunelveli - 627 012,
Tamil Nadu, India
www.msuniv.ac.in

MINUTES OF THE THIRD DOCTORAL COMMITTEE MEETING

The Doctoral Committee Meeting of the Ph.D. Scholar, Mr/Ms. Q. Anlin Lousha Mesiac (Reg.No.20113112092028) was held on 28.02.2022 at 2.30 A.M. /P.M. in the Department of Mathematics, Nesamony Memorial Christian College, Marthandam.

The following members were present

1. Dr. G. Sudhana (Supervisor & Convener)
2. — (Joint Supervisor, if applicable)
3. Dr. D. Nidha (Member)
4. Dr M.K. Angel Jebitha (Member)

The Doctoral Committee critically reviewed the research work entitled "A STUDY ON CONNECTED GEO CHROMATIC NUMBER OF A GRAPH WITH RELATED PARAMETERS" Carried out by Mr./Ms. Q. Anlin Lousha Mesiac and the contents of the draft thesis. The Scholar had completed the second seminar presentation on 28.02.2022 to the faculty members and Research scholars. The attendees list is enclosed herewith. The scholar has 3 publications in the referred journals from his/her research work. The Committee is satisfied with the research performance of the scholar and approves the Thesis submission. The committee also recommends the panel of Examiners for the evaluation of the Thesis.

The Doctoral Committee critically reviewed the research work entitled "A STUDY ON CONNECTED GEO CHROMATIC NUMBER OF A GRAPH WITH RELATED PARAMETERS" Carried out by Mr./Ms. Q. Anlin Lousha Mesiac and the contents of the draft thesis. The Scholar had completed the second seminar presentation on 28.02.2022 to the faculty members and Research scholars. The attendees list is enclosed herewith. The scholar has 3 publications in the referred journals from his/her research work. The Committee is satisfied with the research performance of the scholar and approves the Thesis submission. The committee also recommends the panel of Examiners for the evaluation of the Thesis.

Dr. G. Sudhana, M.Sc.,M.Phil.,Ph.D.
Assistant Professor
Research Department of Mathematics
Nesamony Memorial Christian College
Marthandam - 629 165

13. Research Collaboration - Doctoral Committee Member

a. Women's Christian College, Nagercoil

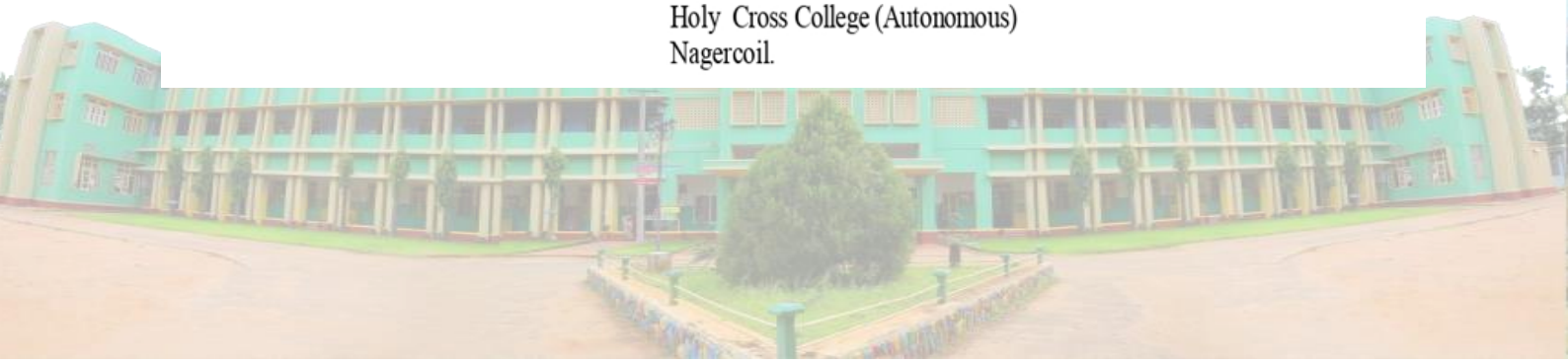
WOMEN'S CHRISTIAN COLLEGE
NAGERCOIL - 1

RESEARCH DEPARTMENT OF MATHEMATICS

Notification

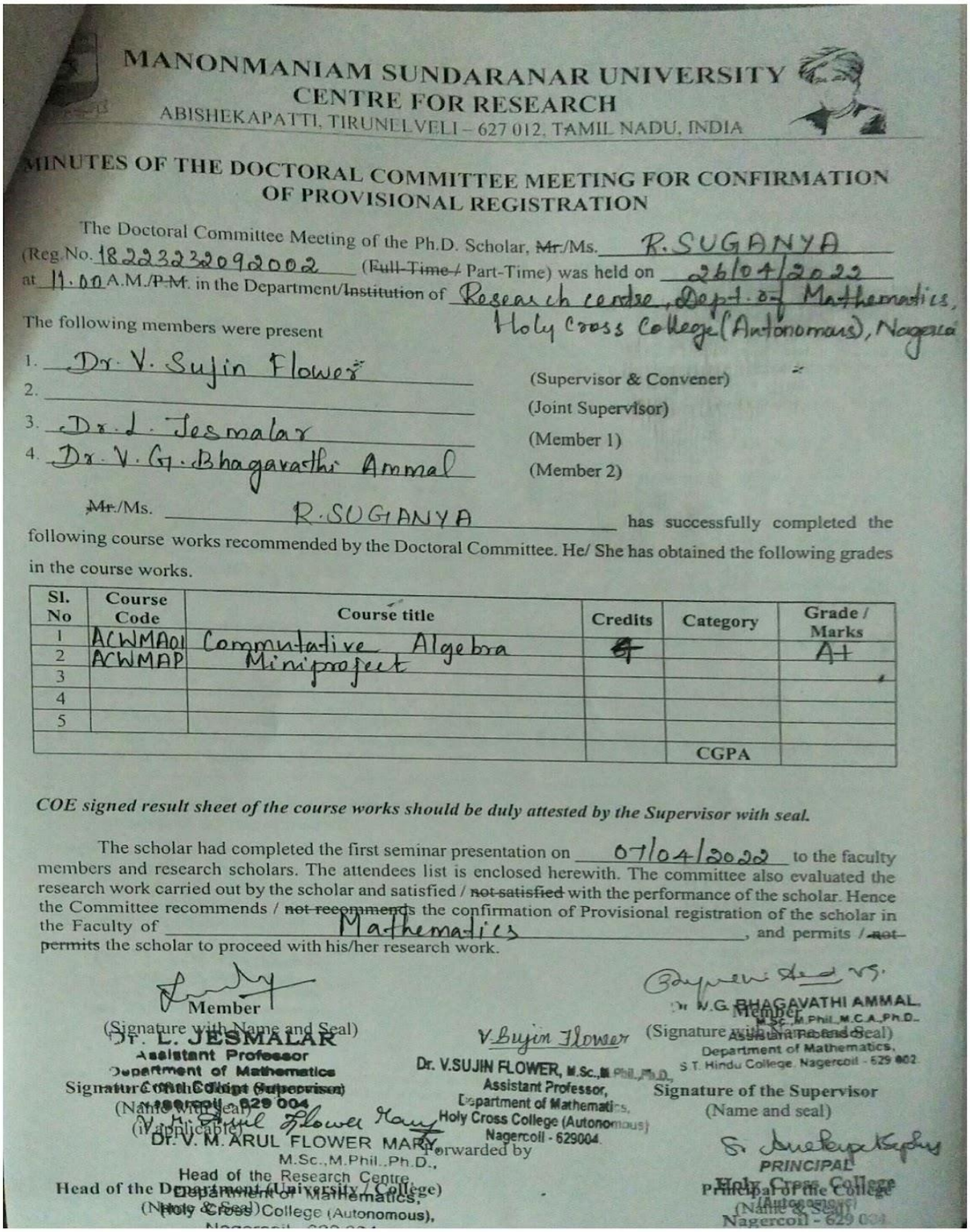
Second Doctoral Committee Meeting

Name of the Scholar	: **Y.A. SHINY**
Register Number	: 19213042092006
Mode of registration	: Full time
Discipline	: Mathematics
Date and time	: 07.04.2022, from 2.30 P.M to 3.30 P.M
Venue	: Seminar Hall - II
Name and address of the supervisor	: **Dr.T.Anitha Baby** Assistant Professor Department of Mathematics Women's Christian College, Nagercoil.
Doctoral Committee Members	: 1. **Dr. C.Nirmala kumari** Associate Professor and Head (Rtd.) Department of Mathematics Women's Christian College, Nagercoil.
	: 2. **Dr.S. SUJITHA** Assistant Professor Department of Mathematics Holy Cross College (Autonomous) Nagercoil.



14. Research Collaboration - Doctoral Committee Member

a. S. T. Hindu College, Nagercoil



MANONMANIAM SUNDARANAR UNIVERSITY
CENTRE FOR RESEARCH
ABISHEKAPATTI, TIRUNELVELI – 627 012, TAMIL NADU, INDIA

MINUTES OF THE DOCTORAL COMMITTEE MEETING FOR CONFIRMATION OF PROVISIONAL REGISTRATION

The Doctoral Committee Meeting of the Ph.D. Scholar, ~~Mr.~~/Ms. R.SUGANYA (Reg.No. 18223232092002 (~~Full-Time~~ / Part-Time) was held on 26/04/2022 at 11.00 A.M./~~P.M.~~ in the Department/~~Institution~~ of Research centre, Dept. of Mathematics, Holy Cross College (Autonomous), Nagercoil

The following members were present

1. Dr. V. Sujin Flower (Supervisor & Convener)
2. _____ (Joint Supervisor)
3. Dr. L. Jesmalar (Member 1)
4. Dr. V. G. Bhagavathi Ammal (Member 2)

~~Mr.~~/Ms. R.SUGANYA has successfully completed the following course works recommended by the Doctoral Committee. He/ She has obtained the following grades in the course works.

Sl. No	Course Code	Course title	Credits	Category	Grade / Marks
1	ACWMA01	Commutative Algebra	4		A+
2	ACWMAP	Miniproject			
3					
4					
5					
				CGPA	

COE signed result sheet of the course works should be duly attested by the Supervisor with seal.

The scholar had completed the first seminar presentation on 07/04/2022 to the faculty members and research scholars. The attendees list is enclosed herewith. The committee also evaluated the research work carried out by the scholar and satisfied / ~~not satisfied~~ with the performance of the scholar. Hence the Committee recommends / ~~not recommends~~ the confirmation of Provisional registration of the scholar in the Faculty of Mathematics, and permits / ~~not permits~~ the scholar to proceed with his/her research work.

Member
(Signature with Name and Seal)
Dr. L. JESMALAR
Assistant Professor
Department of Mathematics
Holy Cross College (Autonomous)
Nagercoil - 629 004

V. Sujin Flower
Dr. V.SUJIN FLOWER, M.Sc., M.Phil., Ph.D.,
Assistant Professor,
Department of Mathematics,
Holy Cross College (Autonomous)
Nagercoil - 629004.
Signature of the Supervisor
(Name and seal)

Member
(Signature with Name and Seal)
Dr. V.G. BHAGAVATHI AMMAL
M.Sc., M.Phil., M.C.A., Ph.D.,
Assistant Professor
Department of Mathematics,
S.T. Hindu College, Nagercoil - 629 002.

(If applicable)
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M.Sc., M.Phil., Ph.D.,
Head of the Research Centre
Department of Mathematics,
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Head of the Department (University / College)
(Name & Seal)

Forwarded by
PRINCIPAL
Holy Cross College
(Autonomous)
Nagercoil - 629 004.
Principal of the College
(Name & Seal)

DEPARTMENT OF CHEMISTRY

1. Research Collaboration - Doctoral Committee Member

a. St. Jerome's College, Anandanadarkudy

MANONMANIAM SUNDARANAR UNIVERSITY
CENTRE FOR RESEARCH
ABISHEKAPATTI, TIRUNELVELI – 627 012, TAMIL NADU, INDIA

MINUTES OF THE DOCTORAL COMMITTEE MEETING FOR CONFIRMATION OF PROVISIONAL REGISTRATION

The Doctoral Committee Meeting of the Ph.D. Scholar, Mr/Ms. K.L. SREE VIDHYA (Reg.No. 19113162032016) (Full-Time / Part-Time) was held on 29-12-2021 at 3.00 A.M./P.M. in the Department/Institution of through online platform (Google meet)

The following members were present

1. Dr. A. AMAL RAJ (Supervisor & Convener)
2. Dr. G. ALLEN GNANARAJ (Joint Supervisor)
3. Dr. R. GLADIS LATHA (Member 1)
4. Dr. J. JOSEPH (Member 2)

Mr/Ms. K.L. SREE VIDHYA has successfully completed the following course works recommended by the Doctoral Committee. He/ She has obtained the following grades in the course works.

Sl. No	Course Code	Course title	Credits	Category	Grade / Marks
1	17MC21	Advanced Polymer chemistry	8		D+
2	17MC23	Advanced photo chemistry	8		D+
3					
4					
				CGPA	8.10

COE signed result sheet of the course works should be duly attested by the Supervisor with seal.

The scholar had completed the first seminar presentation on 10/11/2021 to the faculty members and research scholars. The attendees list is enclosed herewith. The committee also evaluated the research work carried out by the scholar and satisfied / ~~not satisfied~~ with the performance of the scholar. Hence the Committee recommends / ~~not recommends~~ the confirmation of Provisional registration of the scholar in the Faculty of CHEMISTRY, and permits / ~~not permits~~ the scholar to proceed with his/her research work.

Member
(Signature with Name and Seal)
Dr. R. GLADIS LATHA
Assistant Professor
Department of Chemistry
Holy Cross College (Autonomous)
Nagercoil - 629 004

Member
(Signature with Name and Seal)
Dr. J. Joseph
Dr. Joseph
Department of Chemistry
Noorul Islam

Dr. G. ALLEN GNANA RAJ, M.Sc., Ph.D. (if applicable)
Associate Professor
Department of Chemistry
& Research Centre
Scott Christian College (Autonomous)

Supervisor
(Signature with Name and Seal)
ST. JEROME'S COLLEGE,
ANANDHANADARKUDY,
KANYAKUMARI DISTRICT.

DEPARTMENT OF ENGLISH

1. **Research Collaboration – Doctoral Committee Member**

a. S.T. Hindu College, Nagercoil

HOLY CROSS COLLEGE
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(Re-Accredited with 'A++' Grade (CGPA3.35) by NAAC)
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E.mail : holycrossngc@yahoo.com
website : www.holycrossngl.edu.in

Date : 22.10.2021

ATTENDANCE CERTIFICATE

This is to certify that **Dr. S. VAHITHA,** Assistant professor Department of English, S.T. Hindu College, Nagercoil, has attended the Doctoral Committee meeting at Holy Cross College (Autonomous), Nagercoil on 22.10.2021.

PRINCIPAL

PRINCIPAL
Holy Cross College
(Autonomous)
Nagercoil - 629 004.

DEPARTMENT OF ECONOMICS

1. Research Collaboration – Doctoral Committee Member

a. Scott Christian College (Autonomous), Nagercoil

Scott Christian College (Autonomous)
Nagercoil – 629 003

Dr. D. HYLIN REBA, Ph.D.
Assistant Professor
Post-Graduate & Research Centre
Department of Economics

KANYAKUMARI DISTRICT
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To

Dr. S. Jeni Sanjana
Assistant Professor of Economics
Holy Cross College (Autonomous)
Nagercoil

12.04.2022

Respected Madam,

Sub : Second Doctoral Committee Meeting Invitation of Mr. Senmon P.V., Ph.D. Scholar, Reg. No. 20123161031003 / March 2020 – Reg.

I am glad to invite you to the Second Doctoral Committee Meeting of Mr. Senmon P.V., Ph.D. Scholar, Reg. No. 20123161031003 / March 2020 on 19th April, 2022 at 10.30 am in the Conference Hall, Department of Economics, Scott Christian College (Autonomous), Nagercoil. Kindly make it convenient to attend the meeting.

Thank you,

Yours Truly,

D Hylin Reba

(D. Hylin Reba,
Research Supervisor)

DEPARTMENT OF MATHEMATICS

1. Research Collaboration – Joint Author Publication

a. T.D.M.N.S College, T. Kalikulam, Tirunelveli

ADVANCES AND APPLICATIONS IN MATHEMATICAL SCIENCES 2022

THE UPPER EDGE METRIC DIMENSION OF A GRAPH

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Abstract

Let $G = (V, E)$ be a simple graph. For an ordered set $W = \{e_1, e_2, , \dots, e_k\}$of edges and an edge e in a connected graph G, the edge metric representation of e with respective to W is the k-vector$r(e/W) = (d(e, e_1), d(e, e_2), \dots, d(e, e_k))$, where $d(e, f)$ represents the distance between the edges e and f.The set W is called an edge resolving set for G if distinct edges of G have distinct edge metric representations. An edge resolving set of minimum cardinality is called the edge metric dimension of G and is denoted by $dim_e(G)$.An edge resolving set W of $G$is called a minimal resolving set of G if no proper subset of W is an edge resolving set of G. The maximum cardinality of a minimal edge resolving set is the upper edge metric dimension of G and is denoted by $dim_e^+(G)$.The upper edge metric dimension of some standard graphs of determined. It is proved that $1 \leq dim_e(G) \leq dim_e^+(G) \leq m - 1$, where m is the size of G.Connected graphs of size $m \geq 3$ with upper edge metric dimension1 are characterized.

Keywords: *distance, edge resolving set, edge metric dimension, upper edge metric dimension.*
AMS Subject Classification: *05C12.*

Introduction and Preliminaries

Let G be a simple graph with vertex set $V(G)$ and edge set $E(G)$. The order of a graph G is $|V(G)|$, its number of vertices denoted by n. The size of a graph G is $|E(G)|$, its number of edges denoted by m. The *degree*deg (v) of a vertex $v \in V(G)$ is the number of vertices joining to v. We denote by $\Delta(G)$ the maximum degree of a graph G. The *distance* $d(u, v)$ between two vertices $u, v \in V(G)$ is the length of a shortest path between them. A vertex v with deg (v) is entitled as major vertex. An end-vertex u is said to be a terminal vertex of a major vertex v if $d(u, v) < d(u, w)$ for all major vertex w. The number of terminal vertices of major vertex v is called terminal degree and if a major vertex v has positive terminal degree then it is called an exterior major vertex. The number of exterior major vertices of G

2. Research Collaboration – Joint Author Publication

a. T.D.M.N.S College, T. Kalikulam, Tirunelveli

ADVANCES AND APPLICATIONS IN MATHEMATICAL SCIENCES 2022

THE GEODETIC CO-TOTAL DOMINATION IN THE JOIN OF GRAPHS

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Abstract

Let $G = (V, E)$ be a connected graph with at least two vertices,a set$S \subseteq V(G)$ is said to be a geodetic cototal dominating set of G,If S is both geodetic and cototal dominating set of G.The geodetic cototal domination number ,γ_{gct} of G is the minimum cardinality of a geodetic cototal dominating set among all geodetic cototal dominating sets of G.A join graph is the complete union of two arbitrary graphs.In this paper,we determine the geodetic cototal domination number for the join of some standard graphs with others.

Keywords: *geodetic cototal dominating set, geodetic cototal domination number, join of graphs, geodetic cototal domination number of join of graphs.*

AMS Subject Classification: *05C12, 05C69.*

Introduction

By a graph $G = (V, E)$ we mean a finite, connected, undirected graph withoutloops or multiple edges. The order $|V|$ and size $|E|$ of G are denoted by n and$m$ respectively. For graph theoretic terminologies, we refer to West [9]. If G is a connected graph the distance $d(x,y)$ is the length of a shortest $x-y$path in G.The diameter is defined by $d(G) = diam(G) = max\{d(x,y)/x,y \in V(G)$. A vertex v of G is said to be anextreme vertex of the subgraph induced by its neighborhood is complete. The set ofall extreme vertices is denoted by $Ext(G)$. A vertex v is said to be universal vertex if v isadjacent to all other vertices in G, that is G, that is $deg(v) = n - 1$. An $x-y$ path of length $d(x,y)$ is called a x-y geodesic. A vertex v is said to be lie on ageodesic P if v is an internal vertex of P. The closed interval consists of x,y geodesicof G and for a non-empty set $S \subseteq V(G), I[S] = U_{x,y \in S} I[x,y]$.

A set $S \subseteq V(G)$ in a connected graph is a geodetic set of G if $I[S] = V(G)$.The geodetic number of G, denoted by $g(G)$, is the minimum cardinality of a geodeticset of G. Variousconcepts inspired by geodetic sets are introduced in [3,8].A set $S \subseteq V(G)$ in a graph G is a dominating set of G if every vertex v in$\langle V - S \rangle$, there exists a vertex $u \in S$

3. Research Collaboration – Joint Author Publication

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K-PRODUCT CORDIAL LABELING OF POWERS OF PATHS

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Abstract. Let f be a map from $V(G)$ to $\{0, 1, ..., k-1\}$, where k is an integer and $1 \leq k \leq |V(G)|$. For each edge uv assign the label $f(u)f(v)(mod\ k)$. f is called a k-product cordial labeling if $|v_f(i) - v_f(j)| \leq 1$, and $|e_f(i) - e_f(j)| \leq 1$, $i, j \in \{0, 1, ..., k-1\}$, where $v_f(x)$ and $e_f(x)$ denote the number of vertices and edges, respectively labeled with x ($x = 0, 1, ..., k-1$). In this paper, we add some new results on k-product cordial labeling and prove that the graph P_n^m is 4-product cordial. Further, we study the k-product cordial behaviour of powers of paths P_n^m, P_n^4 and P_n^5 for $k = 3$ and 4.

1. Introduction and Terminology

All graphs considered here are simple, finite, connected and undirected. We follow the basic notations and terminology of graph theory as in [4]. The concepts of labeling of graph has gained a lot of popularity in the field of graph theory during the last 60 years due to its wide range of applications. Labeling is a function that allocates the elements of a graph to real numbers, usually positive integers. In 1967, Rosa [16] published a pioneering paper on graph labeling problems. Thereafter, many types of graph labeling techniques have been studied by several authors. All these labelings are beautifully classified by Gallian [3] in his survey. Cordial labeling is a weaker version of graceful and harmonious labeling was defined by Cahit [1]: Let f be a function from the vertices of G to $\{0, 1\}$ and for each edge xy assign the label $|f(x) - f(y)|$. f is called a cordial labeling of G if the number of vertices labeled 0 and the number of vertices labeled 1 differ by at most 1, and the number of edges

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DEPARTMENT OF PHYSICS

1. Research Collaboration – Joint Author Publication

a. Kalasalingam Academy of Research and Education, Krishnan Koil

Volume 15, Number 1, 2022. pp. ??-??

Jordan Journal of Physics

ARTICLE

Structural and Surface characteristics of CuO and Pt/CuO Nanostructured Thin Films

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2. Research Collaboration – Joint Author Publication

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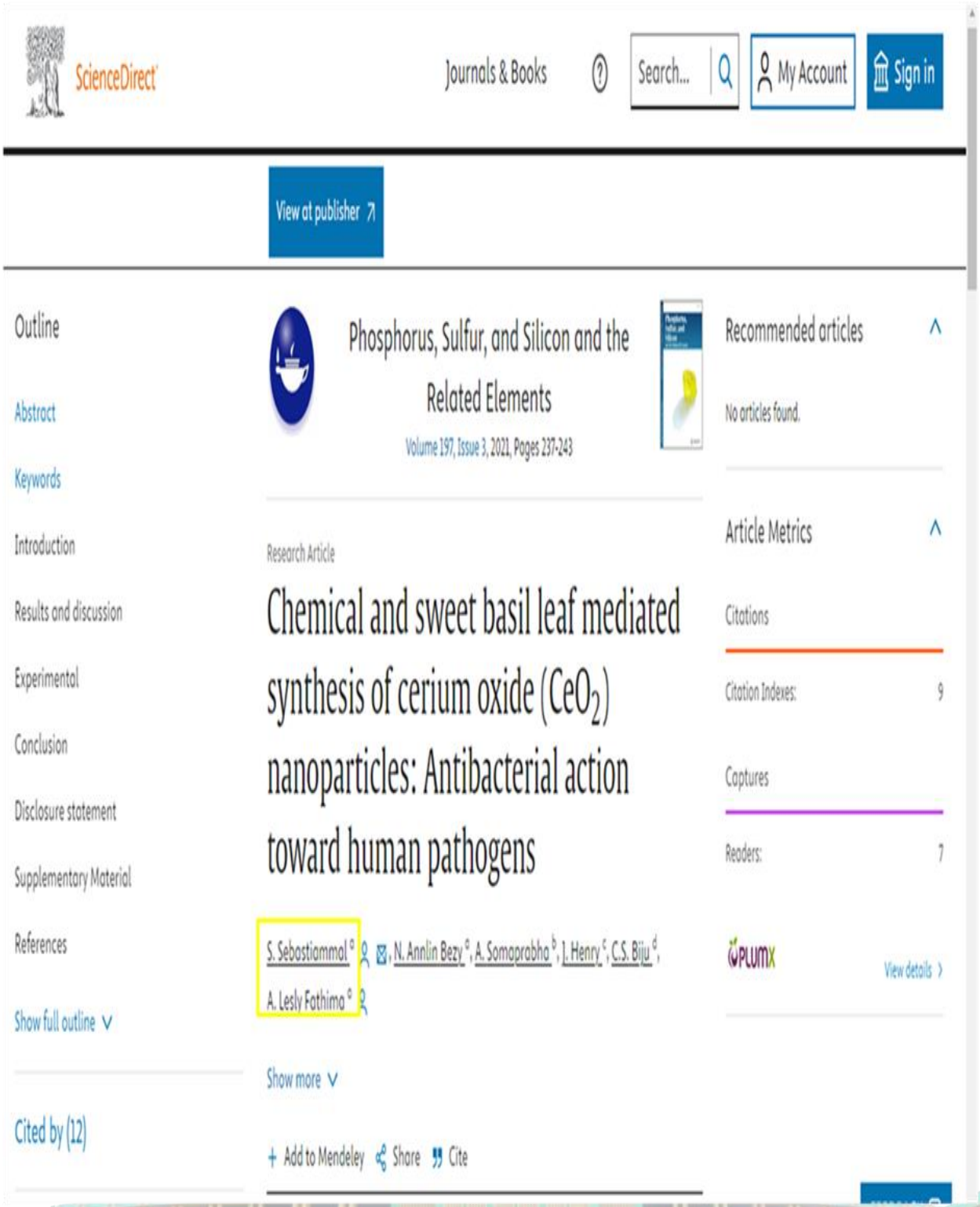

3. Research Collaboration – Joint Author Publication

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Volume 14, Number 5, 2021. pp. 437-444

Jordan Journal of Physics

ARTICLE

Albumen-assisted Synthesis of Nanocrystalline Nickel Ferrite Photocatalyst

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Abstract: As a simple step to remove the polluting dyes in aqua ecosystem, $NiFe_2O_4$ nanoparticles well known for their ferromagnetic properties, low conductivity and high electrochemical stability were prepared by simple auto combustion method using egg white as fuel *via* green synthesis route. The structural, morphological and magnetic properties of prepared $NiFe_2O_4$ was analyzed. The desirable phase purity of the prepared spinel ferrite was deliberated by X-ray Diffractometer (XRD), Fourier Transform Infrared Spectrometer (FTIR), Scanning Electron Microscopy (SEM), Energy Dispersive and Vibrating Sample Magnetometer (VSM). XRD predicts the phase formation, particle size and lattice parameter of the spinel ferrite. The FTIR spectrum confirms the ferrite structure. The morphological and elemental analysis was made using SEM and EDAX. The hysteresis curve reveals the magnetic properties, such as remanence magnetization (Mr), coercivity (H_c) and saturation magnetization (M_s). The photocatalytic efficiency of the synthesized samples was determined from degradation of methylene blue dye. The whole process was monitored using spectrophotometer at regular intervals of time. The maximum photocatalytic degradation efficiency for $NiFe_2O_4$ is around 95.6 %.

Keywords: $NiFe_2O_4$, Ferrite, Green synthesis, Egg white, Combustion, Photocatalyst.

1. Introduction

Wastewater management in developing countries is a major problem due to various industrial processes that meet human needs. Dyeing and pigment industries are of major environmental concern among the various industries, as wastewater includes several non-biodegradable organic colors. From textiles to food, dyes are widely used by humans. Methylene blue is an organic dye that is synthetic and water soluble. It is widely used as a colorant in textiles, paper, plastics, cosmetics, leather, food and many other industries, leading to large dye effluent discharges. If the effluents are not treated properly, they become a serious environmental problem that affects the flora and fauna, as well as human health. Methylene blue dye can irradiate the eyes and skin and damage the respiratory, reproductive, and nervous systems through carcinogenic actions. In

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4. Research Collaboration – Joint Author Publication

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Jordan Journal of Physics

ARTICLE

Albumen-mediated Green Synthesis of $ZnFe_2O_4$ Nanoparticles and Their Physico-Chemical Properties

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Abstract: Spinel ferrites with general formula AB_2O_4 possess charming magnetic and electrical properties owing to their thermal and chemical steadfastness. Spinel zinc ferrite ($ZnFe_2O_4$) nanoparticles have attracted massive attention due to their unusual amalgamation of properties, especially magnetic properties, where these properties are equipped as suitable candidates in the field of electronics. Here, a simple self-combustion technique is made with the assistance of albumen to synthesize nanocrystalline zinc ferrite ($ZnFe_2O_4$) particles. The egg white (albumen) that is used in the synthesis process plays the fuel role in the process of combustion. The results of the powder X-ray diffraction (PXRD) and Fourier Transform Infrared Spectroscopy (FTIR) suggested that the synthesized nanoparticles are of single phase and show spinel structure. The photoluminescence studies reported a doublet peak at around 360-380 nm. The functional groups present in the synthesized nanoparticles were revealed from FTIR data. EDX findings give an account of the percentage composition of the elements Fe, Zn and O present in the synthesized sample. High-resolution Scanning Microscope (HRSEM) reveals the agglomerated coalescence nature of ferrite nanoparticles.

Keywords: Ferrite, PXRD, FTIR, HRSEM, EDX Albumen.

1. Introduction

Ferrites are of interest due to their electrical, magnetic and mechanical properties, which can be adapted to the requirements of device manufacturing and biological applications. Magnetic Nanoparticles have emerging biomedical applications in sundry areas, such as disease diagnostics, magnetic resonance imaging, sensors, actuators, magnetic storage devices, … etc. Nano-sized ferrites of the MFe_2O_4 type are the most significant magnetic materials which have yet to be properly investigated on the way to their physical and chemical properties. The metal-iron ratio plays a crucial role in the regulation of MFe_2O_4 nanoparticles' magnetic properties [1, 2]. Due to the increased volume fraction of surface atoms, surface effects may be crucial when reducing

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5. Research Collaboration– Joint Author Publication

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PERIODICO di MINERALOGIA
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Tribological Behavior of AA7075 Nanohybrid Composites at High Temperature

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Abstract

In this research work, an attempt was made to reinforce AA7075 aluminium alloy with nanosized Boron Carbide (B_4C) and Silicon Carbide (SiC) particles through stir casting technique. The manufactured composites were tested for wear utilizing pin on disc apparatus at high temperature by varying %reinforcement, applied load, sliding distance and applied velocity. The results revealed that the composites exhibit lower wear rate owing to the formation of Mechanically Mixed Layer (MML) due to third body abrasion as confirmed through EDAX. At low temperature, wear occurred through abrasion; whereas at high temperature, it was due to shearing, wear shift from mild to severe when the load exceeds 20N. When the temperature exceeds 225°C, no MML was formed as most of the materials were removed from composites owing to its reduction in hardness, hence the pin exhibit severe wear. The composites were produced with the objective of reducing the wear rate which was achieved using the WASPAS and VIKOR optimization technique. Cracks, pits and resolidified materials are some of the features observed on the worn surface morphology.

Keywords— *Stir Casting · High Temperature · Wear · VIKOR · WASPAS · Worn surface morphology*

INTRODUCTION

Aluminum Metal Matrix Composite (AMMC) is gaining its importance in aerospace sector owing to its enhanced material properties and strength to weight ratio [1]. Composites are made using a variety of processes including power sintering, in-situ manufacturing and liquid metallurgy [2]. Manufacturing through liquid stir casting is the most cost-effective and suitable for large production of these processes [3]. The homogenous distribution of composites is influenced by numerous parameters such as particle size, volume percentage, particle shape and surface treatment [4]. The most often utilized reinforcing materials were Boron Carbide (B4C), Silicon Carbide (SiC), Aluminum oxide (Al_2O_3), Graphite (Gr), and Carbon Nanotubes (CNT) [5]. The major issue of AMMC is wettability of particles over the matrix material [6]. The wettability of composites is improved by adding flux. In comparison to untreated particles, heat-treated particles mix uniformly [29].

The existence of a mechanical mixed layer enhances the wear resistance of composites by preventing direct metal-to-metal contact [7]. The weight % and counter face stiffness have a negative impact on the wear rate, but the load and speed applied have a beneficial impact [8]. The duct surface has no influence on wear rate due to the presence of tribo substrate [9]. At lower loads, composite materials show abrasion and delamination wear, but at greater loads, they show severe wear [10]. The slowing of the subsurface increases with increased rush in the moderate wear area, but decreases when reinforcing particles are applied [11]. The presence of graphite activates the self-lubrication feature, which is required for components that frequently require lubrication [12].

Basavarajappa et al. [13] investigated the tribological characteristics of silicon carbide and graphite enhanced hybrid composites. Stir casting was used to make the AA2219 hybrid composites with different volume fractions. Variations in sliding speed and load were carried out to conduct the wear test. The results demonstrated that the composites outperform unreinforced composites in terms of wear resistance. Surappa et al. [14] investigated the effect of the strengthening percentage, sliding velocity, loading and sliding distance on wear using complete factor design. They presented a regression equation that showed wear reinforcing dependency, sliding velocity, load and sliding lengths and wear dependence.

The challenge of determining and picking the best answer based on contradicting characteristics in a large variety of possibilities is constantly present in the manufacturing industry. WASPAS (Weighted Aggregated Sum–Product Assessment) and VIKOR was a Multi Criteria Decision Making approach (MCDM) that is used to choose the best choice from a set of options. Each classification issue consists primarily of four main components: (a) equivalents, (b) abilities, (c) a significant weight for each attribute and (d) different output measures in connection to various characteristics [15, 16]. According to the results of the survey, a great deal of effort has gone into improving the material qualities by adding reinforcing particles. However, only a little amount of research has been done to improve the properties of the AA7075 aluminium alloy at high temperature reinforced with nanoparticles. The current study used a Stir casting approach to strengthen AA7075 aluminium alloy with Silicon Carbide (SiC) and Boron Carbide (B_4C) nanoparticles. The WASPAS and VIKOR techniques were used to improve the findings. The worn surface morphology was analyzed using the Scanning Electron Microscope (SEM).

Experimental Procedure

Material Preparation

The matrix material, AA7075 aluminium alloy with the chemical composition shown in Table 1, was obtained from Perfect Metal Alloys in Bangalore. As reinforcement, SiC and B_4C particles with an average particle size of 5nm were chosen from the Bhukanvala sectors. The moisture content in the selected reinforcing particles was removed by heating them to a temperature of 250°C. In an electric furnace, a graphite crucible

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6. Research Collaboration– Joint Author Publication

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Raman spectroscopic study of cinnamyl-1 diphenylmethyl-4 piperazine (Cinnarizine) at high pressure

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Diamond Anvil Cell (DAC)
High-pressure
Biochemical systems

ABSTRACT

Raman spectra of Cinnarizine in the 35–3400 cm^{-1} region were studied at high pressures up to 15.3 GPa, using a Diamond Anvil Cell. Broadening of bands is observed starting from ~0.9 up to ~11–12 GPa pressures as evidenced by the changes in the Raman spectra of some modes. Plots of frequency vs pressure of bands, show increase of frequency with pressure for most of the bands and the slopes, $d\omega/dP$, of some bands show clear changes around ~2.7, ~5, ~7.5 ~9 and ~11–12 GPa indicating phase transformation caused by changes in structure and chemical bonds at these pressures. The present article describes high pressure effects on cinnarizine studied by Raman Spectroscopy and is supported by density function theoretical calculations.

1. Introduction

From the point of view of medicinal chemistry [16,17], a com-

DEPARTMENT OF CHEMISTRY

1. Research Collaboration – Joint Author Publication

a. Scott Christian College (Autonomous), Nagercoil

Original Article

Structural Characterization of Inclusion Complex of Stigmasterol with Alpha-Cyclodextrin using Spectroscopy and Molecular Modeling

Kuruz Francy[1], Johnson Prema Kumari[1], Simon Lizy Roselet[2]

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Abstract

Background: Stigmasterol possesses numerous physiological effects and is used as food supplements and behaves as a pharmaceutical agent. It exhibits anticancer effects against various cancers. The usefulness of the stigmasterol is restricted due to its poor solubility. To overcome this and enhance the solubility and bioavailability of this phytosterol, molecular encapsulation is utilized to augment the desirable properties of stigmasterol. This research work aims to investigate the interaction between stigmasterol and alpha-cyclodextrin (α-CD) in aqueous solution as well as in solid state and experimentally examined by spectral techniques. **Methods:** The liquid complexes are characterized by ultraviolet (UV)-visible spectroscopy and solid inclusion complexes are characterized by Fourier transformer infrared resonance and ^{1}H nuclear magnetic resonance spectroscopy. The thermal behavior of the complex is analyzed by differential scanning calorimeter. Phase solubility studies are done to learn the solubility of the newly synthesized complex. **Results:** Formation constant from UV-visible analysis is found to be 569 M^{-1} by Benesi Hildebrand equation. The solubility constant is calculated to be 52 M^{-1}. The results obtained prove the inclusion which is confirmed through molecular docking studies. **Conclusion:** The newly synthesized inclusion complex is a potent pharmaceutical agent in drug formulation as stigmasterol solubility is enhanced when included in the cavity of α-CD.

Keywords: Alpha-cyclodextrin, formation constant, inclusion complex, stigmasterol

Introduction

Stigmasterol, known as stigmasterin found in various medicinal plants, is an unsaturated phytosterol resembling cholesterol in both structure and function. The molecule constitutes a rigid tetracyclic backbone (6-6-6-5) with one secondary hydroxyl group at one end and one C_{10} branched hydrocarbon chain at the other end.[1] It is a secondary metabolite used in health-enhancing constituents of natural food.[2] According to Song *et al.*,[3] stigmasterol possesses pharmacological properties such as cytotoxicity, antioxidant, anti-inflammatory, antimutagenic, hypoglycemic, antiosteoarthritic, and antitumor activity. Despite a wide range of potential attractiveness, stigmasterol is poorly used by the pharmaceutical industry due to its low solubility, high melting point, and chalky taste.[4] To overcome this problem, stigmasterol may be complexed with different compounds, which would enhance their physicochemical properties.[5] One such is to form an inclusion complex with alpha-cyclodextrin (α-CD). CDs are water-soluble, nonreducing, and macrocyclic oligosaccharides that have glucose units formed by an α-1,4 linkage with a lipophilic central cavity and a hydrophilic outer surface.[6] CDs enhance the delivery of low water-soluble and chemically unstable drugs to the body through biological membranes by improving the bioavailability of drug molecules. In this research, we evaluate the interaction between stigmasterol and

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DEPARTMENT OF BOTANY

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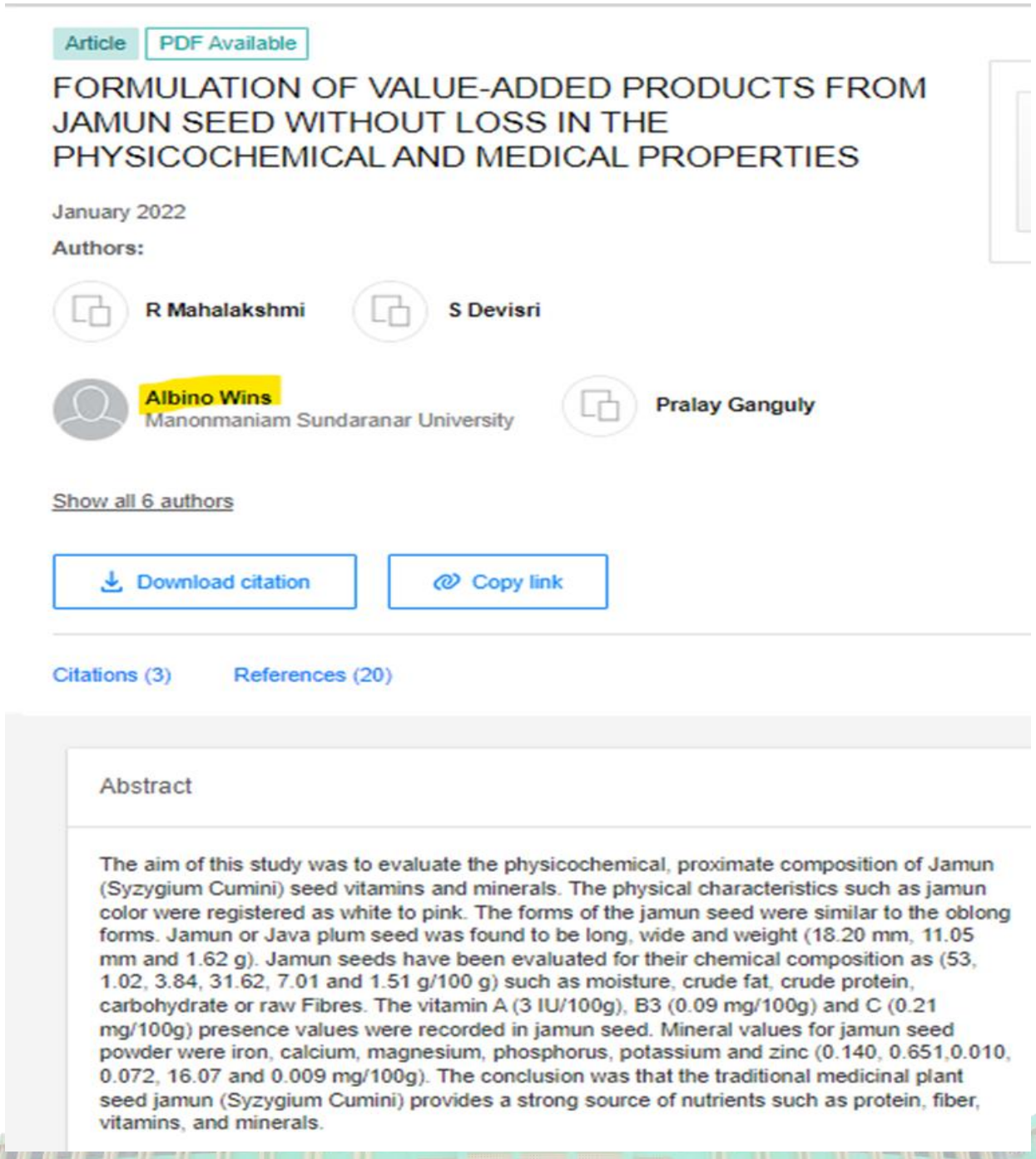

Article PDF Available

FORMULATION OF VALUE-ADDED PRODUCTS FROM JAMUN SEED WITHOUT LOSS IN THE PHYSICOCHEMICAL AND MEDICAL PROPERTIES

January 2022

Authors:

R Mahalakshmi S Devisri

Albino Wins
Manonmaniam Sundaranar University

Pralay Ganguly

Show all 6 authors

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Citations (3) References (20)

Abstract

The aim of this study was to evaluate the physicochemical, proximate composition of Jamun (Syzygium Cumini) seed vitamins and minerals. The physical characteristics such as jamun color were registered as white to pink. The forms of the jamun seed were similar to the oblong forms. Jamun or Java plum seed was found to be long, wide and weight (18.20 mm, 11.05 mm and 1.62 g). Jamun seeds have been evaluated for their chemical composition as (53, 1.02, 3.84, 31.62, 7.01 and 1.51 g/100 g) such as moisture, crude fat, crude protein, carbohydrate or raw Fibres. The vitamin A (3 IU/100g), B3 (0.09 mg/100g) and C (0.21 mg/100g) presence values were recorded in jamun seed. Mineral values for jamun seed powder were iron, calcium, magnesium, phosphorus, potassium and zinc (0.140, 0.651,0.010, 0.072, 16.07 and 0.009 mg/100g). The conclusion was that the traditional medicinal plant seed jamun (Syzygium Cumini) provides a strong source of nutrients such as protein, fiber, vitamins, and minerals.

2. Research Collaboration – Joint Author Publication

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Volume 45, Part 2, 2021, Pages 2087-2090

Production and characterization of extracellular pectinase from a newly isolated Bacillus species from fruit waste soil

T. Murugan [a], P. Deepika [a], A. Kowsalya [a], K. Sivasubramanian [a], R.P. Rejisha [b], M. Murugan [b], J. Albino Wins [c]

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Abstract

The present investigation was carried for identification of pectinolytic bacteria and determination of their pectinolytic activity. The isolation was made from soil sample collected from fruit wastes. Screening of pectinolytic activity was achieved with pectin agar plate. Among 36 strains tested 12 shows pectinolytic activity. The potent isolate FWS II-4 was identified as *Bacillus* sp. and further used for enzyme production. Pectinase was produced by submerged fermentation and the purified. The purified enzyme demonstrated 3.40 mg/ml of total protein and 484.70 U/mg of specific activity. In characterization studies, the pectinase demonstrated good activity at pH 6.0 and 40 °C. Also, the bacterial strain showed maximum growth when the medium pH was 7.0 and incubated 37 °C.

3. Research Collaboration – Joint Author Publication

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b. Department of Botany, Nesamony Memorial Christian College, Marthandam

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Annals of R.S.C.B., ISSN:1583-6258, Vol. 26, Issue 1, 2022, Pages. 549 - 565
Received 08 November 2021; Accepted 15 December 2021.

Diversity of Carnivorous Plants in Kanyakumari Wild life Sanctuary, Southern Western Ghats

B. Santhiya[1], E. Asha Prayline[2], T. Sindhu Biravi[2], C. Domettila[3], A. Anami Augustus Arul[4], S. Sukumaran[2], R. Mary Sujin[5], T.S. Shynin Brintha[1] and S. Jeeva[1]

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Abstract

Biodiversity has always been an interesting and untamed parts of the earth for human beings even they are much closer to each other. The magical parts of biodiversity, plants play the major role. Like several animals, various plant species are carnivorous, that they consume insects and other small animals for a primary source of minerals and nutrients for growth. Instead of actually eating insects, carnivorous plants trap them by various means, depending upon the kind of plant. Carnivorous plants are on the verge of extinction the world over. The Western Ghats is a global biodiversity hotspot and a world heritage site. Kanyakumari forests form the southernmost ranges of Agasthiyamalai, a compact forested tract in southern Western Ghats. This study aimed at surveying and assessing the Kanyakumari Wildlife Sanctuary for carnivorous plants and resulted in the collection of 13 species. Among the species, 10 taxa belonging to the family Lentibulariaceae, and 3 taxa belonging to the family Droseraceae. *Utricularia babui* S.R.Yadav, Sardesai & S.P.Gaikwad was new distributional record was found in the Western Ghats of India where it grows along small streams in open places. Owing to its significant geographic position in the southern end of the Western Ghats, varied climate and altitude Kanyakumari Wildlife Sanctuary possesses a very rich and diverse flora, especially carnivorous plants. This study gains importance because of the study area faces a lot of threats, mostly anthropogenic, such as summer fires, collection of non-timber forest products, conversion of forest lands into monoculture (rubber plantation), hydroelectric power projects, etc.

Keywords - Western Ghats, Carnivorous plants, *Drosera*, *Utricularia*.

4. Research Collaboration – Joint Author Publication

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Physiological and Molecular Plant Pathology
Volume 119, May 2022, 101816

Phytopathogenic bacterial and nematicidal activity of extracts and powder of *Adhatoda vasica* on *Meloidogyne incognita*

N. Benit, T.S.J. Kumar, Khalid S. Almaary, Mohamed S. Elshikh, Rabab Ahmed Rasheed, Paulrayer Antonisamy

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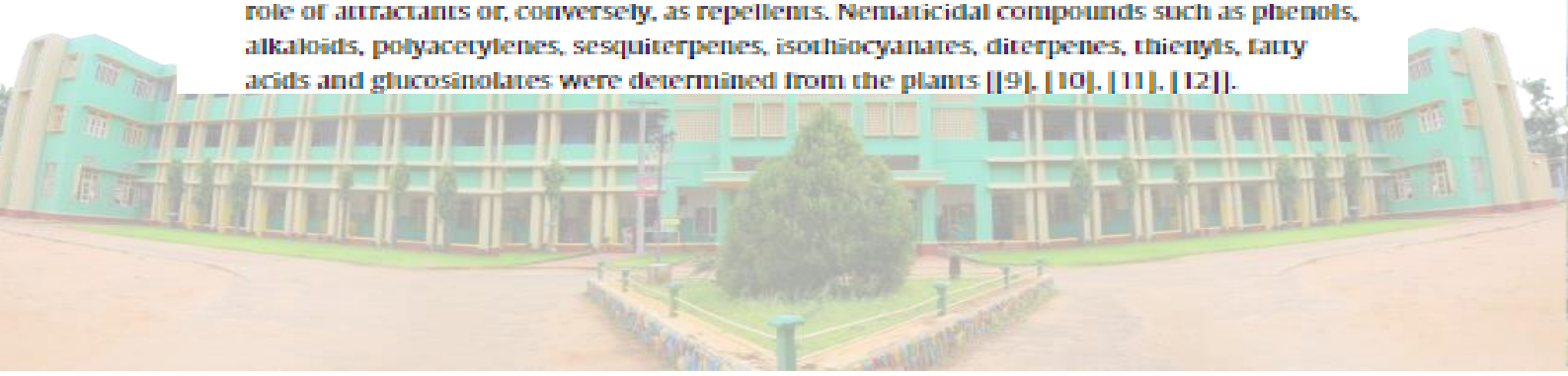
Introduction

The undesirable application of synthetic pesticides to control nematode pests increased phytotoxicity, environmental pollution, and resistance to nematodes, in addition to its very high cost [1]. The growing environment coupled with ban on many nematicides needed a decrease in chemical nematicides usage and the search of natural pesticides. The utilization of natural antibacterial and nematocidal compounds in crop production and protection has attracted much more attention from consumers and farmers [2]. Plant–parasitic nematodes (PPN) are significant agricultural pests capable of creating yield losses to a great extent. The nematode pests affected roots of agricultural crops and involved in root dysfunction, decreased rooting volume and decreased efficiency in utilization of nutrients and water [3]. The root–knot nematodes Meloidogyne spp. involve economic loss in horticulture crops [4,5]. The application of plant secondary metabolites as an alternative route for management of root–knot nematode has become increasing significant [7]. The implementation of successful nematode pesticide control programme requires integrated approach that combines various factors [6]. Plants secrete secondary metabolites that help them to be more competent in their own system. Moreover, these small molecules exert a wide range of effects on the plant and on other living organisms. They involved in abscission, flowering, fruit development, controlling perennial growth through signal deciduous behaviour etc. [8]. They act as antimicrobials and perform the role of attractants or, conversely, as repellents. Nematicidal compounds such as phenols, alkaloids, polyacetylenes, sesquiterpenes, isothiocyanates, diterpenes, thienyls, fatty acids and glucosinolates were determined from the plants [[9], [10], [11], [12]].



5. Research Collaboration – Joint Author Publication

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Jundishapur Journal of Microbiology
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Research Article
Vol. 15, No.2 (2022)

Comparative Phytochemical Screening and Antibacterial Activity of *Azadirachta indica* and *Cassia auriculata*.

R. Jacklin Jemi[1], A. Iren Amutha[2], S. Ani Besant[3], P. Shasheela[4], J. Celin Pappa Rani[5] and S. Suga[6].

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Received 2022 February 2; **Revised** 2022 March 20; **Accepted** 2022 April 24

ABSTRACT:

The present study of phytochemical screening and antibacterial activity done to identify potential drugs. The flower extracts of *Azadirachta indica* and *Cassia auriculata* were chosen for a comparative study. It resulted that *Azadirachta indica* flower extract proved to be highly potent against all most of the tested organisms and can treat different aliments

Keywords: Phytochemical, Antibacterial activity, drugs.

INTRODUCTION:

Medicinal plants have been of age long remedies for human diseases because they contain components of therapeutic value. They are rich sources of ecologically developed secondary metabolites, which are potential remedies for different ailments. In many developing countries, traditional medicine is one of the primary health care systems. Natural products of higher plants may give a new source of antimicrobial agents with possibly novel mechanisms of action.

Microorganisms harmful to human beings are termed as pathogens. In the recent past, due to the emergence and increase of such pathogenic strains resistant to multiple antibiotics and the continuing emphasis on health care costs, many researchers have tried to develop new, effective antimicrobial reagents free of resistance and cost. The antimicrobial activity is known to be a function of the surface area in contact with the microorganisms. Drug resistance is a serious global problem, and spread of resistance poses additional challenges for clinicians and the pharmaceutical industry. The use of plant extracts and phytochemicals, both with known antimicrobial properties, can be of great significance in therapeutic treatments. There is a continuous and urgent need to discover new antimicrobial compounds with diverse chemical structures and novel mechanism of action because there has been an alarming increase in the incidence of new and emerging infectious diseases (Parekh and Chanda, 2008). The world

DEPARTMENT OF ZOOLOG

1. Research Collaboration – Joint Author Publication

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A new freshwater crab, *Oziotelphusa parakkai* sp. nov. from Tamil Nadu, India (Brachyura: Gecarcinucidae)

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(Received 8 December, 2020; accepted 18 February, 2021)

ABSTRACT

A new species of freshwater crab of the genus *Oziotelphusa* Muller, 1887, is described from a lake in Tamil Nadu, southern India. *Oziotelphusa parakkai* sp. is recognized as a new species based on a unique combination of characters of the abdomen, carapace, chelipeds, and first gonopods.

Key words : Oziotelphusa, Gecarcinucidae, Brachyura, Crustaceans, Paratelphusa, Taxonomy.

Introduction

Until recently little attention had been paid to the freshwater crabs of India (*Potamidae* and *Gecarcinucidae*), there has been an upsurge of interest in this group and a number of workers are now active in this field with the result that the number of species is increasing rapidly (Raghavan *et al.*, 2015; Kumar *et al.*, 2017; Pati *et al.*, 2017; Smrithy Raj *et al.*, 2017). Despite this increased effort, there is still a lot of species awaiting discovery.

Species of the gecarcinucid *Oziotelphusa* Müller, (1887) are generally found in rice fields, river embankments and streams in the low lying areas of Sri Lanka and southern India (Bahir and Yeo, 2005; Pati and Sharma, 2012). *Oziotelphusa* is found in both Sri Lanka (*O. hippocastanum, O. ceylonensis, O. minneriyansis, O. stricta*) and Southern India (*O. aurantia, O. bouvieri*) (Ng and Tay, 2001). The present study describes a new species of this genus (*O. parakkai* **sp. nov.**) from Parakkai, Kanyakumari, Tamil Nadu, India.

Materials and Methods

Freshwater crabs (*Oziotelphusa parakkai* **sp. nov.**) were collected by hand at night from the channel near Lake Parakkai, Nagercoil, Kanyakumari District, Tamil Nadu, in southern India. This species hides in its burrow during day time. Live crabs were photographed and others were preserved in 70% ethanol and were either dissected or used for morphometric and molecular analyses. Specimens were deposited in Zoological Survey of India, Chennai, Tamil Nadu. The terminology and measurements for the morphological study followed Cumberlidge

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2. Research Collaboration – Joint Author Publication

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Int. J. Pharm. Sci. Rev. Res., 72(2), January - February 2022; Article No. 05, Pages: 31-35 ISSN 0976 – 044X

Research Article

Physico-chemical Characterization of Hemolymph Hemagglutinin of the Marine Crab *Grapsus albolineatus*

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ABSTRACT

Lectins, multivalent cell-agglutinating proteins, by virtue of their exquisite sugar specificities are useful tools in widespread biomedical applications. The present investigation was carried out to study the physico-chemical characteristics of the hemolymph hemagglutinin of the marine crab *Grapsus albolineatus*. The specificity of agglutinin to erythrocytes, sugars, glycoproteins, pH, temperature and the effects of divalent cations and calcium chelators was determined. A naturally occurring hemagglutinin with high HA titer of 2048 with rat erythrocytes was identified in the hemolymph of the marine crab *G. albolineatus*. The HA activity was stable between pH 7 and 9 and showed thermal stability between 0° and 40°C. The hemolymph agglutinin was calcium dependent and HA activity was reduced when exposed to calcium chelators such as EDTA and trisodium citrate. Hemagglutination inhibition assay exhibited the strongest binding specificity towards the sugars GalNAc, GlcNAc and glycoprotein fetuin. The cross-adsorption assay revealed that the hemolymph of the marine crab *Grapsus albolineatus* possesses single agglutinin.

Keywords: hemagglutinin, lectin, GalNAc, GlcNAc, *Grapsus albolineatus*.

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DOI: 10.47583/ijpsrr.2022.v72i02.005

DOI link: http://dx.doi.org/10.47583/ijpsrr.2022.v72i02.005

INTRODUCTION

Immunity is the ability of organisms to distinguish self from non-self. Invertebrates which lack adaptive immune system rely on innate immunity to respond to non-self-material[1]. Lectins, one of the innate immune compounds play an important role as a sensor and regulator of foreign organisms[2]. Lectins are carbohydrate binding proteins and in invertebrates, lectin are vital means for non-self-recognition and clearance of invading microorganisms. The binding specificity of lectin therefore provides them with ability to recognize a wide variety of pathogens by recognizing the sugar found on the surface of pathogen. Lectin-carbohydrate interaction represents a ligand-receptor interaction that is universal in living organisms[3].

Lectins can bind to the carbohydrate moieties on the surface of erythrocytes and agglutinate the erythrocytes, without altering the properties of the carbohydrates. Hence they are also named as hemagglutinin. Lectins exist in almost all organisms like viruses, bacteria, yeast, and protozoan and throughout all animal and plant kingdom[4]. Lectins are multivalent carbohydrate-binding proteins with the ability to agglutinate erythrocytes, bacteria and other normal and malignant cells displaying more than one saccharide of sufficient complementarity. Their specificity is always determined by the type of carbohydrate to which they bind[5].

Lectins with specific carbohydrate specificity have been purified from various organisms. In invertebrates the presence of agglutinins are reported in hemolymph[6-13]Among arthropods, crustaceans are considered rich source of lectins with affinity for a variety of carbohydrates especially modified sialic acids. Lectins have been characterized from marine crabs, *Scylla serrata*[14-15], *Cancer antennarius*[16], blue crab, *Callinectes sapidus*[17] and marine hair crab *Erimacrus isenbeckii*[18]. Hence an attempt was carried out to study the physico-chemical characterization of hemolymph hemagglutinin of the marine crab *G. albolineatus*.

MATERIALS AND METHODS

Experimental animal

Marine crab, *Grapsus albolineatus* were collected form Kadiyapatanam (8.1262°N latitude and 77.3196°E longitude) and Muttom (37.6428°N latitude and 78.3924°E longitude) coasts, Kanyakumari, Tamilnadu, India.

Erythrocyte collection

Erythrocytes from several mammals were collected for hemagglutination assay. Blood for this purpose was obtained by heart puncture (rat and guinea pig), venipuncture of the ear (rabbit), fore arm (human and dog), neck (buffalo and ox) and from the slaughter house

DEPARTMENT OF ENGLISH

1. Research Collaboration – Joint Author Publication

a. English Business Communicaton, Steden University of Applied Sciences, Qatar

ISSN 0976-5417 Cross. Res.: June 2021 Vol. 12 No. 1

Technological Progressions as a Cultural Labyrinth in Suzanne Collins's *The Hunger Games*- A Cognitive Walk-through

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Assistant Professor, English Business Communication, Stenden University of Applied Sciences, Qatar

ABSTRACT

The research paper entitled "Technological Progressions as a Cultural Labyrinth in Suzanne Collins's The Hunger Games - A Cognitive Walk-through" underscores various representations of technological advancements and its influence on culture. Technological progressions in communication, entertainment, fashion, food, genetic engineering, medicine, security, transportation, and weaponry make materialism as a new way of life by creating a new culture altogether where corporations maintain control over the products they sell as well as the individuals they solicit to. They, in turn, lead to human exploitation resulting in societal dystopia, wherein people are tricked and petrified by technology, war, or media. Though technology is in high demand, its cultural subjectivity towards the individuals and society needs to be addressed. Study findings from the desk research relate to the totalitarian web of surveillance culture, that's interwoven with the contemporary pop/ celebrity competitive culture of the United States.

Key Words:*Culture, materialism, dystopia, post- apocalyptic, humanism, exploitation, cultural subjectivity, surveillance culture, totalitarianism*

The Hunger Games (2008), a dystopian novel written by Suzanne Collins (1962 -), deals with technological growths and its effects upon the society, life and emotions of the people. The book is the first in *The Hunger Games* trilogy which is followed by *Catching Fire* (2009) and *Mockingjay* (2010). Suzanne Collins, born on August 10, 1962, in Hartford, Connecticut, was the youngest of the four children. Collins recollects her father's faith as an ex- US Air forceman, as his "great responsibility and urgency about educating his children about war" (Wiener 56). Collin's dystopia has fetched much media attention for its interwoven totalitarian theme, with "plenty of clues of how power was enacted in this totalitarian future society", drawing "parallels in past and present political regimes" (Rosen, 2012). The study involves desk research and attempts a cognitive walk-through considering the unbridgeable gap between technology and humanism for "tough-minded cognitive atheism usually tends to be an emotional given rather than a developed system" (Hirsch 249).

Collins's prime focus is to reason out the cultural acceptance of the people of Panem with technological advancements in communication, entertainment, fashion, food, genetic engineering, medicine, security, transportation, and weaponry. Besides, she brings in much attention to the pop and celebrity culture through her characters which is realistic to certain extent and futuristic to the core. In the novel, the hunger games are an annual televised event where the ruthless capitol randomly selects one boy and one girl, each between the ages of twelve to eighteen. They play against each other where they are forced to fight one another to death. The victor wins a new house along with food, fame and wealth. Leigh H. Edwards in his book *The Triumph of Reality TV: the revolution in American Television* points out, "Character is one of the main driving engines for the success of a reality show. Having established a strong character who encourages audience identification reality programmes then take that character into stories that cross media platforms in a co-ordinated way"(17).

Hunger Games' surveillance society is dystopian under a totalitarian government. It is in a futuristic post- apocalyptic world, in which one distinct government rules in an absolute power. The protagonist, Katniss's life in District 12 is pretty much a competition to survive against poverty and hunger. There are no TVs or cameras or winners or losers, so it is not literally a game, but District 12 is very much like the arena. The cruel Government controls Katniss and the people of District 12 the same way that the game makers control her in the arena, with "the camera crews, perched like

DEPARTMENT OF ZOOLOGY

Jayaraj Annapackiam College for Women, Periakulum, Theni
Reviewer

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Principal

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Date: 07.10.2021

To

Dr. C. Josephine Priyatharshini
Assistant Professor, Department of Zoology
Holy Cross College (Autonomous)
Nagercoil - 629 004.

Dear Madam,

Warm Greetings from JAC!

Thank you very much for your consent to be the Reviewer to review the Research Articles in Zoology, for the "JAC Journal of Science, Humanities and Management (JACJOSHAM, ISSN: 2347-9868 Biannual) published by our College to inspire, recognize and support quality in Research.

I am pleased to inform you that this assignment is for a period of three academic years 2021-2024 and I solicit your support for the success of the Journal.

Thank you,

Yours sincerely,

Principal
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to me

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I would appreciate if I receive your comments by 30th of september
Plz find the attached files (paper and manuscript procedure)
For your kind information
The journal is in print mode (not in online mode) and we continue to publish the Journal with articles from our college and other institutions.
Hence I solicit your support to publish the articles with quality. You can send any comments regarding the article
Thank you
With regards
Dr.M. Kalanithi, Dean-Research and Associate Professor of Chemistry
Jayaraj Annapackiam College for Women, (Accredited with A+ grade by NAAC)
Periyakulam
Mobile : 9488177617

Papers for review Inbox

jacjosham... 18/3/2022

to me

Dear madam
Thank you for your support in bringing out our JACJOSHAM journal
Herewith I have attached two papers for reviewing. I would appreciate if I could receive the comments before 31.03.2022
Thank you

With Regards,

Dr. M. Kalanithi,
Dean of Research and Associate Professor of Chemistry,
Jayaraj Annapackiam College for Women (Autonomous),
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DEPARTMENT OF HISTORY

Value Added Course on Epigraphy

Date: 26-02-2022, 05-03-2022, 12-03-2022, 19-03-2022 & 26-03-2022

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