

Mrs TINJUMOL MATHEW

Supervising Guide

Department of Mathematics

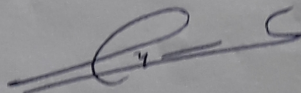
ST. Thomas College Palai

Arunapuram P.O.- 686 574

Kerala, India

CERTIFICATE

I hereby certify that, the dissertation entitled “**GOAL PROGRAMMING**” is a bonafide record of work done by Mr. Adarsh J, Mr. Akhil Saji and Mr. Jobin Jose Kunnel under my supervision in partial fulfillment of the requirement for the Degree of Bachelor of Science in Mathematics of M.G University and that no part of this work has been submitted earlier for the award of any degree.

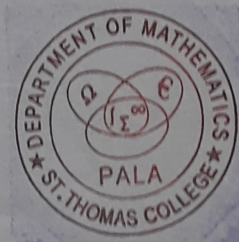


Miss Tinju mol Mathew

(Supervising Guide)

Place: Palai

Date: 18-05-2019



Thankachan

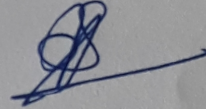
Thankachan Augustine

**Head of the Dept:
MATHEMATICS
St. Thomas College, Palai**

Dr. SUNIL C MATHEW
Associate Professor
Department of Mathematics
St. Thomas College Palai
Arunapuram P. O. - 686 574
Kerala, India.

CERTIFICATE

Certified that the dissertation entitled **A Study on Inner Product Spaces** is a record of bona fide work done by **Mr. Ajas P. Jose** under my supervision and guidance in the Department of Mathematics, St. Thomas College Palai during 2016-2019 towards the partial fulfilment of the requirements of the degree of Bachelor of Science in Mathematics by Mahatma Gandhi University, Kottayam.



Arunapuram
29/03/2019

Sunil C Mathew
(Supervising Guide)

E-mail: sunilcmathew@gmail.com, Phone: 04822-232416 (Res.), +919495109316(Mob.)

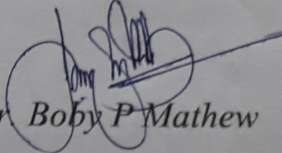


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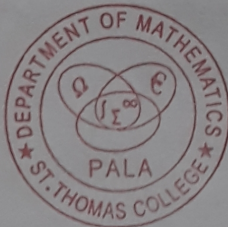
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I hereby certify that, the dissertation entitled 'Numerical differentiation and integration' is a bonafide record of work done by Mr. Sanju Thomas, Mr. Akshay Krishna P and Mr. Akhil Jose under my supervision in partial fulfillment of the requirement for the Degree of Bachelor of Science in Mathematics of M.G University and that no part of this work has been submitted earlier for the award of any degree.

Place : Pala


Dr. Bobby P Mathew
(Supervising Guide)

Date : 21/03/2019



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Thankachen
Prof. Thankachan Augustine
Head of The Department
Department of Mathematics
St Thomas college Pala

Mrs TINJUMOL MATHEW

Supervising Guide

Department of Mathematics

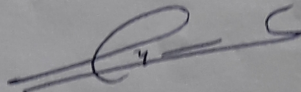
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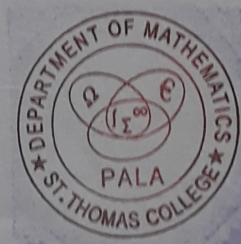


Miss Tinju mol Mathew

(Supervising Guide)

Place: Palai

Date: 18-05-2019



Thankachan

Thankachan Augustine

**Head of the Dept:
MATHEMATICS
St. Thomas College, Palai**

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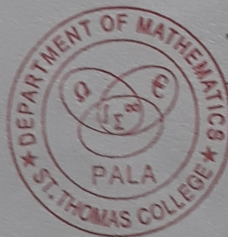


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Forwarded by

Priya
Mrs. Priya Philip
Assistant Professor Ad-hoc



Thankachan
Thankachan Augustine
Associate Professor and
Head of the Department

Place: Palai
Date: 18/03/2019

External Examiner

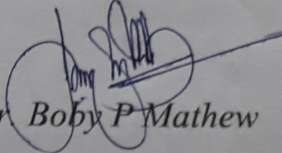


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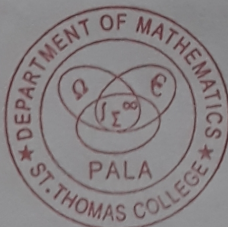
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Place : Pala


Dr. Bobby P Mathew
(Supervising Guide)

Date : 21/03/2019



Counter signed by,
Thankachen
Prof. Thankachan Augustine
Head of The Department
Department of Mathematics
St Thomas college Pala

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ST. THOMAS COLLEGE, PALA, KOTTAYAM-686575



CERTIFICATE

This is to certify that the Dissertation Entitled "LAPLACE TRANSFORM" is submitted to Mahatma Gandhi University, Kottayam in partial fulfillment for the requirement for the award of the Bachelor's Degree of Science in Mathematics. This work is a bona fide work done by **Amal Siby** during the period of their study in the Department Of Mathematics, St. Thomas College, Pala, under my supervision and guidance.

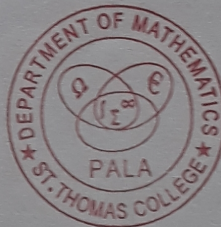
Guided By,

Raj Mathew

Dr. Raj Mathew
Assistant Professor

Thankachan

Mr. Thankachan Augustine
Associate Professor
Head of the Department



Place: Pala

External Examiner

Date :

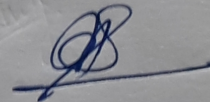
Dr. SUNIL C. MATHEW
Associate Professor
Department of Mathematics
St. Thomas College Palai
Arunapuram P.O., - 686574
Kerala, India

CERTIFICATE

Certified that the dissertation entitled **A Study on Game Theory** is a record of bona fide work done by **Mr. Ashik Jayan** under my supervision and guidance in the Department of Mathematics, St. Thomas College Palai during 2016-2019 towards the partial fulfillment of the requirements of the degree of Bachelor of Science in mathematics by Mahatma Gandhi University, Kottayam.

Arunapuram

30/03/2019



Sunil C. Mathew

(Supervising Guide)

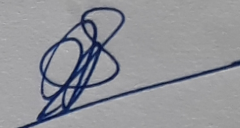
E-mail :sunilcmathew@gmail.com, Phone : 04822-232416(Res), +919495109316 (Mob)

Dr. SUNIL C MATHEW
Associate Professor
Department of Mathematics
St. Thomas College Palai
Arunapuram P. O. - 686 574
Kerala, India.

CERTIFICATE

Certified that the dissertation entitled **A Study on Magic Graphs** is a record of bona fide work done by **Mr. Balu P Kartha** under my supervision and guidance in the Department of Mathematics, St. Thomas College Palai during 2016-2019 towards the partial fulfilment of the requirements of the degree of Bachelor of Science in Mathematics by Mahatma Gandhi University, Kottayam.

Arunapuram
30/03/2019



Sunil C Mathew
(Supervising Guide)

E-mail: sunilcmathew@gmail.com, Phone: 04822-232416 (Res.), +919495109316(Mob.)

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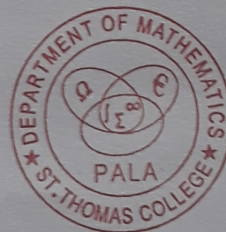


CERTIFICATE

This is to certify that the Dissertation entitled "CRYPTOGRAPHY" is submitted to Mahatma Gandhi University, Kottayam in partial fulfillment for the requirement for the award of Degree in Bachelor of Science in Mathematics. This record is a bona fide work done by Bastian Sunny, during the period of his study in the department of Mathematics, St. Thomas College Palai, under my supervision and guidance.

Forwarded by

Priya
Mrs. Priya Philip
Asst. Professor (Ad-hoc)



Thankachan
Thankachan Augustine
Associate Professor and
Head of the Department

Place: Palai
Date: 18/03/2019

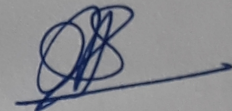
External Examiner

Dr. SUNIL C MATHEW
Associate Professor
Department of Mathematics
St. Thomas College Palai
Arunapuram P. O. - 686 574
Kerala, India.

CERTIFICATE

Certified that the dissertation entitled **A Study on Riemann Stieltjes Integral** is a record of bona fide work done by **Mr. Brigil Emmanuel** under my supervision and guidance in the Department of Mathematics, St. Thomas College Palai during 2016-2019 towards the partial fulfillment of the requirements of the degree of Bachelor of Science in Mathematics by Mahatma Gandhi University, Kottayam.

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Sunil C Mathew
(Supervising Guide)

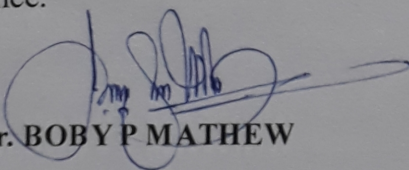
E-mail: sunilcmathew@gmail.com, Phone: 04822-232416 (Res.), +919495109316(Mob.)

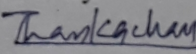
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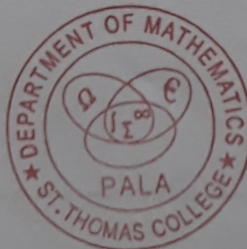
CERTIFICATE

This is to certify that the Dissertation entitled "GRAPH COLORING " is submitted to Mahatma Gandhi University, Kottayam in partial fulfillment for the requirement for the award of Degree in Bachelor of Science in Mathematics. This record is a bonafide work done by **DAISE J. KAPPEN**, during the period of his study in the department of Mathematics, St. Thomas College Palai, under my supervision and guidance.


Dr. BOBY P MATHEW
Asst. Professor

Forwarded by

Thankachan Augustine
Associate Professor and
Head of the Department

Place: Palai
Date: 18.3.19



External Examiner

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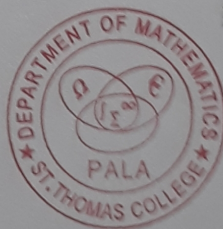


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This is to certify that the Dissertation Entitled "QUEUING THEORY" is submitted to Mahatma Gandhi University, Kottayam in partial fulfillment for the requirement for the award of the Bachelor's Degree of Science in Mathematics. This work is a bona fide work done by **Dayal V** during the period of their study in the Department Of Mathematics, St Thomas College, Pala, under my supervision and guidance.

Guided By,

Raj Mathew
Dr. Raj Mathew
Assistant Professor



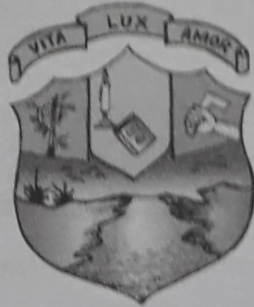
Thankachan
Mr. Thankachan Augustine
Associate Professor
Head of the Department

Place: Palai

Date :

External Examiner

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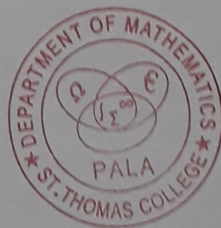


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Guided By,

Raj Mathew
Dr. Raj Mathew
Assistant Professor



Thankachan
Mr. Thankachan Augustine
Associate Professor
Head of the Department

Place: Pala

External Examiner

Date :

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This is to certify that the Dissertation entitled "A STUDY ON SEMIGROUPS" is submitted to **Mahatma Gandhi University, Kottayam** in partial fulfilment for the requirement for the award of Degree in Bachelor of Science in Mathematics. This record is a bona fide work done by **GEO PLATHOTTATHIL**, during the period of his study in the department of mathematics, **St. Thomas College, Palai**, under my supervision and guidance.

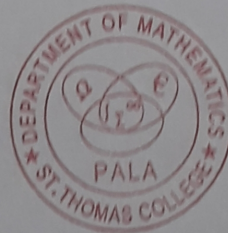
Forwarded by,

Handwritten signature of Tommy Thomas in black ink.

Tommy Thomas
Associate Professor

Handwritten signature of Thankachan Augustine in black ink.

Thankachan Augustine
Head of the Department



Place: Palai

External Examiner

Date:

ST. THOMAS COLLEGE PALAI
DEPARTMENT OF MATHEMATICS



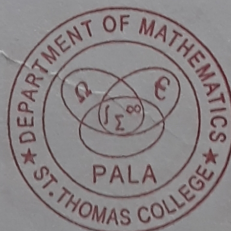
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Forwaded by,

Tommy Thomas
Associate Professor

Thankachan Augustine
Head of the Department



Place: Palai

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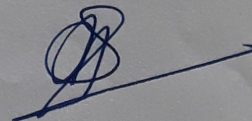
Date:

Dr. SUNIL C MATHEW
Associate Professor
Department of Mathematics
St. Thomas College Palai
Arunapuram P. O. - 686 574
Kerala, India.

CERTIFICATE

Certified that the dissertation entitled **A Study On Graceful Graphs** is a record of bona fide work done by **Mr. Jacobin James Mathews** under my supervision and guidance in the Department of Mathematics, St. Thomas College Palai during 2016-2019 towards the partial fulfillment of the requirements of the degree of Bachelor of Science in Mathematics by Mahatma Gandhi University, Kottayam.

Arunapuram
30/03/2019



Sunil C Mathew
(Supervising Guide)

Thankachan
Thankachan Angulim,
Dept. of Mathematics.

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ST. THOMAS COLLEGE, PALA, KOTTAYAM-686575

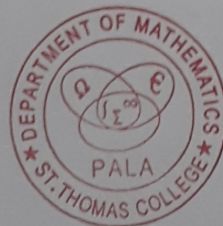


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Guided By,

Raj Mathew
Dr. Raj Mathew
Assistant Professor



Thankachan
Mr. Thankachan Augustine
Associate Professor
Head of the Department

Place: Palai

Date :

External Examiner

Mrs TINJUMOL MATHEW

Supervising Guide

Department of Mathematics

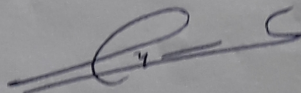
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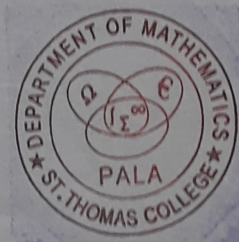


Miss Tinju mol Mathew

(Supervising Guide)

Place: Palai

Date: 18-05-2019



Thankachan

Thankachan Augustine

**Head of the Dept:
MATHEMATICS
St. Thomas College, Palai**



RESEARCH AND POST GRADUATE
DEPARTMENT OF MATHEMATICS
ST THOMAS COLLEGE PALA KERALA

ARUNAPURAM – 686574, KERALA

Phone: 04822-212317, Fax: 91-4822-216313

Miss. Ann Maria Thankachan

Associate Professor(Ad-Hoc)

CERTIFICATE

I hereby certify that this dissertation is a bonafide record of work covered out by **Sanij Sebastian, Shaiban M.S., Joel E. Joseph** under my supervision in partial fulfilment of the requirements for the Degree of master of Science in Mathematics of Mahatma Gandhi University and that no part of this work has been submitted earlier for the award of any degree.

Arunapuram

29.03.2019

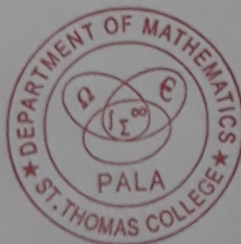
Miss. Ann Maria

Forwarded by:

Thankachan

Prof. Thankachan Augustine

Head of the Department



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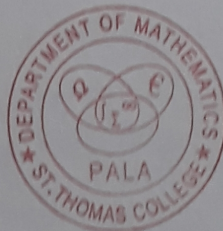
CERTIFICATE

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Forwaded by,

Handwritten signature of Tommy Thomas.

Tommy Thomas
Associate Professor



Handwritten signature of Thankachan Augustine.

Thankachan Augustine
Head of the Department

Place: Palai

External Examiner

Date:

**ST. THOMAS COLLEGE PALAI DEPARTMENT OF
MATHEMATICS**



CERTIFICATE

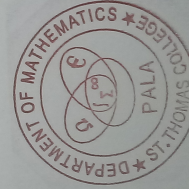
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Forwarded by

Mrs. Priya Philip
Guest Lecturer
and

Thankachan Augustine
Associate Professor

Head of the Department



Place: Palai
Date :


External Examiner

ST. THOMAS COLLEGE PALAI
DEPARTMENT OF MATHEMATICS



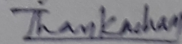
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Dr. BOBY P MATHEW

Asst. Professor

Forwarded by

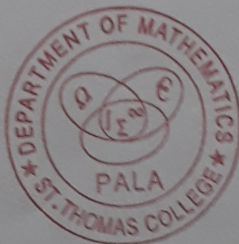


Thankachan Augustine

Associate Professor and
Head of the Department

Place: Palai

Date: 18-03-19



External Examiner

DEPARTMENT OF MATHEMATICS
ST. THOMAS COLLEGE, PALA, KOTTAYAM-686575



CERTIFICATE

This is to certify that the Dissertation Entitled "LAPLACE TRANSFORM" is submitted to Mahatma Gandhi University, Kottayam in partial fulfillment for the requirement for the award of the Bachelor's Degree of Science in Mathematics. This work is a bona fide work done by **Ragulkumar P.R** during the period of their study in the Department Of Mathematics, St. Thomas College, Pala, under my supervision and guidance.

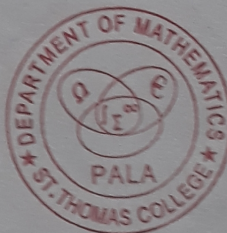
Guided By,

Raj Mathew

Dr. Raj Mathew
Assistant Professor

Thankachan

Mr. Thankachan Augustine
Associate Professor
Head of the Department



Place: Pala

External Examiner

Date :



RESEARCH AND POST GRADUATE
DEPARTMENT OF MATHEMATICS
ST THOMAS COLLEGE PALA KERALA

ARUNAPURAM – 686574, KERALA

Phone: 04822-212317, Fax: 91-4822-216313

Miss. Ann Maria Thankachan

Associate Professor(Ad-Hoc)

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Arunapuram

29.03.2019

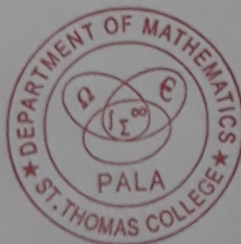
Miss. Ann Maria

Forwarded by:

Thankachan

Prof. Thankachan Augustine

Head of the Department



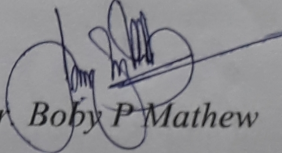


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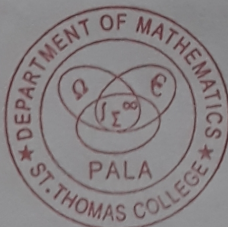
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I hereby certify that, the dissertation entitled 'Numerical differentiation and integration' is a bonafide record of work done by Mr. Sanju Thomas, Mr. Akshay Krishna P and Mr. Akhil Jose under my supervision in partial fulfillment of the requirement for the Degree of Bachelor of Science in Mathematics of M.G University and that no part of this work has been submitted earlier for the award of any degree.

Place : Pala


Dr. Bobby P Mathew
(Supervising Guide)

Date : 21/03/2019



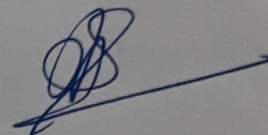
Counter signed by,
Thankachen
Prof. Thankachan Augustine
Head of The Department
Department of Mathematics
St Thomas college Pala

Dr. SUNIL C MATHEW
Associate Professor
Department of Mathematics
St. Thomas College Palai
Arunapuram P. O. - 686 574
Kerala, India.

CERTIFICATE

Certified that the dissertation entitled **A Study on Functions of Bounded Variation** is a record of bona fide work done by **Mr. Sankar** under my supervision and guidance in the Department of Mathematics, St. Thomas College Palai during 2016-2019 towards the partial fulfillment of the requirements of the degree of Bachelor of Science in Mathematics by Mahatma Gandhi University, Kottayam.

Arunapuram
30/03/2019



Sunil C Mathew
(Supervising Guide)

E-mail: sunilcmathew@gmail.com, Phone: 04822-232416 (Res.), +919495109316(Mob.)

DEPARTMENT OF MATHEMATICS
ST. THOMAS COLLEGE, PALA, KOTTAYAM-686575



CERTIFICATE

This is to certify that the Dissertation Entitled "QUEUING THEORY" is submitted to Mahatma Gandhi University, Kottayam in partial fulfillment for the requirement for the award of the Bachelor's Degree of Science in Mathematics. This work is a bona fide work done by Sarath M Suresh during the period of their study in the Department Of Mathematics, St. Thomas College, Pala, under my supervision and guidance.

Guided By,

Raj Mathew

Dr. Raj Mathew

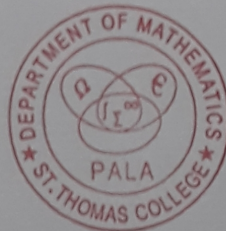
Assistant Professor

Thankachan

Mr. Thankachan Augustine

Associate Professor

Head of the Department



Place: Palai

Date :

External Examiner



RESEARCH AND POST GRADUATE
DEPARTMENT OF MATHEMATICS
ST THOMAS COLLEGE PALA KERALA

ARUNAPURAM – 686574, KERALA

Phone: 04822-212317, Fax: 91-4822-216313

Miss. Ann Maria Thankachan

Associate Professor(Ad-Hoc)

CERTIFICATE

I hereby certify that this dissertation is a bonafide record of work covered out by **Sanij Sebastian, Shaiban M.S., Joel E. Joseph** under my supervision in partial fulfilment of the requirements for the Degree of master of Science in Mathematics of Mahatma Gandhi University and that no part of this work has been submitted earlier for the award of any degree.

Arunapuram

29.03.2019

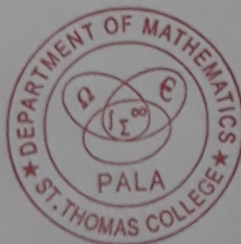
Miss. Ann Maria

Forwarded by:

Thankachan

Prof. Thankachan Augustine

Head of the Department

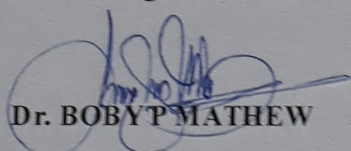


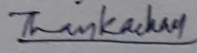
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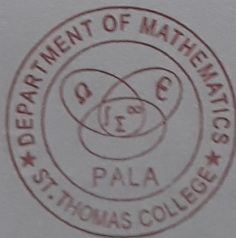
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This is to certify that the Dissertation entitled "GRAPH COLORING " is submitted to Mahatma Gandhi University, Kottayam in partial fulfillment for the requirement for the award of Degree in Bachelor of Science in Mathematics. This record is a bonafide work done by **TIJO KURIAN**, during the period of his study in the department of Mathematics, St. Thomas College Palai, under my supervision and guidance.


Dr. BOBY P MATHEW
Asst. Professor

Forwarded by

Thankachan Augustine
Associate Professor and
Head of the Department

Place: Palai
Date: 18-3-19



External Examiner