

ADVENT OF PORTUGUESE AND IMPACT ON LATIN CATHOLICS IN  
KOLLAM-A HISTORICAL REVIEW OF OUR LADY OF PURIFICATION  
CHURCH

First Degree Programme

In

History Under CBCS System

2018-2021

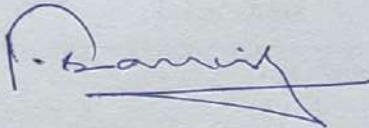


FATIMA MATA NATIONAL COLLEGE [AUTONOMOUS]

KOLLAM

## CERTIFICATE

This is to certify that the project titled "Advent of Portugese and Impact on Latin Catholics in Port Kollam –A historical review of Our Lady of Purification Church" is record of research work carried out by SAJITHA SAJLVANI ANANDAN, AIMY BASIL, NIKHIL.P, ABHIRAMLB, SANDEEP.S at the Department of History, Fathima Matha National College, (Autonomous), Kollam affialited to the University of Kerala in partial fulfillment of the Degree of Bachelor of Arts, First Degree Programme in History under CBCS system.



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# ROLE OF GURU GOPINATH IN MAKING OF KERALA NATANAM

First Degree Programme

in

History under CBCS System

2018-2021



FATIMA MATA NATIONAL COLLEGE [AUTONOMOUS]

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## CERTIFICATE

This is to certify that the project titled "**ROLE OF GURU GOPINATH IN MAKING OF KERALANATANAM**", is a record of research work carried out by RADHU S R, SARAVAN P KUMAR, AMAL SHAJI, KEERTHANA S RADHAKRISHNAN, PELSITA MARY, LINTA JOHN, at the Department of History, Fatima Mata National College [Autonomous], Kollam, affiliated to the University of Kerala in partial fulfillment of the Degree of Bachelor of Arts, First Degree Program in History under CBCS System.



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**E.M.S NAMBOOTHIRIPAD AND ADMINISTRATIVE  
REFORMS IN KERALA**

First Degree Programme  
in  
History Under CBCS System  
2018-2021



**FATIMA MATA NATIONAL COLLEGE [AUTONOMOUS]  
KOLLAM**

## CERTIFICATE

This is to certify that the dissertation entitled as “E.M.S. NAMBOOTHIRIPAD AND ADMINISTRATIVE REFORMS IN KERALA”, is the authentic record of studies carried out by SHAMSEENA S, DEEPENDHU A.S., SHAMNA S, JOEMOL J, JINCY JOY, ANEESH GEORGE, GINU GRACIAN under my supervision and guidance at the Department of History in Fatima Mata National College (Autonomous) Kollam, Affiliated to the university of Kerala. No part of this dissertation has been published or submitted before for the award of any Degree, Diploma, Title or Recognition.



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**A HISTORICAL AND SOCIAL APPROACH TO THE  
ST JOSEPH CHURCH  
KUREEPUZHA**

**First Degree Programme  
in  
History Under CBCS System  
2018-2021**



**FATIMA MATA NATIONAL COLLEGE  
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**CERTIFICATE**

This is to certify that the project titled " A Historical Appropach To The St Joseph church, Kureepuzha" is a record of research carried out by Angaleena S, Aswathy G, Asiya Azees, Bency George, Sruthy B, Anudarsh V J, Shanin M Shaji, at the "Department of History" FATIMA MATA NATIONAL COLLEGE (AUTONOMOUS),KOLLAM under my guidance and submitted to the Fatima Mata National College (Autonomous) Kollam, affiliated to the university of Kerala in partial fulfillment of the Degree of Bachelor of Arts, First Degree Programme in History under CBCS System.

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**“PREPARATION OF DERIVATIVES OF  
ORGANIC COMPOUNDS”**

*Dissertation submitted to the Fatima Mata National College (Autonomous) in  
partial fulfilment of the requirements for the award of the degree of*

**BACHELOR OF SCIENCE IN CHEMISTRY**

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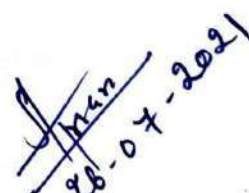
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# **EFFECT OF ELECTROLYTE CONCENTRATION ON VISCOUS FLOW OF POLYMER SOLUTION**

Dissertation Submitted to the Fatima Mata National College(Autonomous)  
in partial fulfillment of the requirements for the award of the degree of

**BACHELOR OF SCIENCE**

**IN**

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Submitted to Fatima Mata National College (Autonomous) in partial fulfilment  
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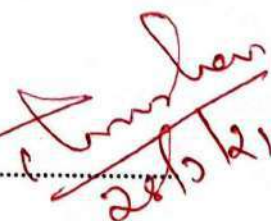


DEPARTMENT OF CHEMISTRY  
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FIRST DEGREE PROGRAM IN CHEMISTRY (CBCSS)

**"ANALYSIS OF FT-IR SPECTRUM OF FEW ORGANIC COMPOUNDS"**

*Dissertation submitted to the Fatima Mata National College (Autonomous) in partial fulfilment of the requirements for the award of the degree of*

**BACHELOR OF SCIENCE**

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**CHEMISTRY**

**BY**

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**FATIMA MATA NATIONAL COLLEGE**

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# PREPARATION OF FEW AZO DYES

Dissertation Submitted to the Fatima Mata National College (Autonomous) in partial fulfillment of the requirements for the award of the degree of

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**IN**

**CHEMISTRY**

**BY**

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**“SYNTHESIS AND CHARACTERISATION OF POLYANILINE “**

*Dissertation submitted to University of Kerala in partial fulfillment of the requirements for the award of the Degree of*

**BACHELOR OF SCIENCE IN CHEMISTRY**

By

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APARNA M  
CHINNU MARY C  
SANJANA P S  
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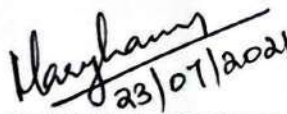
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# **GREEN CHEMISTRY: BIODIESEL AND BIOPETROL**

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**JULY 2021**

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This is to Certify that the project entitled, "Green Chemistry: Biodiesel and Biopetrol" have been effectively carried out by Sixth Semester Bsc Chemistry Students at the Department of Chemistry, Fatima Mata National College (Autonomous), Kollam under the guidance of Dr.Biju Mathew in partial fulfillment of the award of Degree of Bachelor of Science.



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**PREPARATION OF BIOCHAR FROM AGRICULTURAL  
RESIDUE AND ITS UTILITY FOR REMOVAL OF  
ORGANIC DYE-BATCH ADSORPTION STUDIES**

Dissertation Submitted to the Fatima Mata National College (Autonomous)  
in partial fulfillment of the requirements for the award of the degree of

**BACHELOR OF SCIENCE**

**IN**

**CHEMISTRY**

**BY**

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This is to certify that the project work entitled, "PREPARATION OF BIOCHAR FROM AGRICULTURAL RESIDUE AND ITS UTILITY FOR REMOVAL OF ORGANIC DYE-BATCH ADSORPTION STUDIES" has been carried out by VI semester students

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# REMOVAL AND RECOVERY OF DYES USING TAMARIND SHELL-BATCH ADSORPTION STUDIES

Dissertation Submitted to Fatima Mata National College (Autonomous) in  
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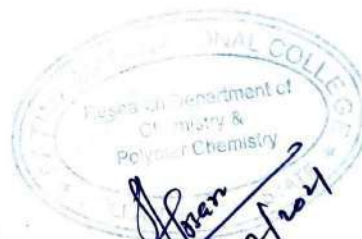
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**PREPARATION OF BIOCHAR FROM  
AGRICULTURAL RESIDUE AND ITS UTILITY FOR  
THE REMOVAL OF CRYSTAL VIOLET-BATCH  
ADSORPTION STUDIES**

*Dissertation Submitted to Fatima Mata National College (Autonomous) in partial  
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**BACHELOR OF SCIENCE IN CHEMISTRY**

BY

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**A BRIEF STUDY OF WATER QUALITY PARAMETERS OF  
DRINKING WATER OF KARUNAGAPALLI TALUK OF KOLLAM  
DISTRICT**

*Dissertation submitted to the University of Kerala in partial  
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POLYMER CHEMISTRY**

**BY**

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### **CERTIFICATE**

This is to certify that the dissertation entitled "A brief Study of water quality parameters of drinking water of Karunagappally Taluk of Kollam district" is a bonafide record of the research work carried out by Students of BSc Polymer Chemistry (2018-21) under the supervision of Dr. Shibu Joseph ST, Assistant Professor, Department of Chemistry, Fatima Mata National College (Autonomous), Kollam, in partial fulfillment of the requirement for the degree of Bachelor of Science in Polymer Chemistry, Kerala University and no part of this dissertation has been presented before for any other degree.

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28/07/2021  
Dr Apsara A. P

**Kollam**



**A BRIEF STUDY OF WATER QUALITY PARAMETERS  
OF DRINKING WATER OF KOLLAM TALUK OF  
KOLLAM DISTRICT**

*Dissertation submitted to the University of Kerala in partial  
fulfillment for the award of the degree of*

**BACHELOR OF SCIENCE IN  
POLYMER CHEMISTRY**

**BY**

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28/07/2021  
Dr Apsara A. P

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**A BRIEF STUDY OF WATER QUALITY PARAMETERS  
OF DRINKING WATER OF KOTTARAKKARA TALUK OF  
KOLLAM DISTRICT**

*Dissertation submitted to the University of Kerala in partial  
fulfillment for the award of the degree of*

**BACHELOR OF SCIENCE IN  
POLYMER CHEMISTRY**

**BY**

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Annie John    Reg No: U1814010

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Sharon K Shaji Reg No: U1814020



*Under the supervision of*

**Dr. SHIBU JOSEPH S T**  
**Assistant Professor**

**POST GRADUATE AND RESEARCH DEPARTMENT OF CHEMISTRY  
FATIMA MATA NATIONAL COLLEGE  
(AUTONOMOUS) KOLLAM-691001, KERALA**

**July 2021**



**Dr Apsara A P**  
Head, Dept. of Chemistry

# **Fatima Mata National College**

**(Autonomous)**

**Kollam, Kerala, India - 691 001**

**(Re accredited with 'A' Grade by NAAC)**

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10.06.2020

## **CERTIFICATE**

This is to certify that the dissertation entitled "A brief Study of water quality parameters of drinking water of Kollam Taluk of Kollam district" is a bonafide record of the research work carried out by Students of BSc Polymer Chemistry (2018-21) under the supervision of Dr. Shibu Joseph S T, Assistant Professor, Department of Chemistry, Fatima Mata National College (Autonomous), Kollam, in partial fulfillment of the requirement for the degree of Bachelor of Science in Polymer Chemistry, Kerala University and no part of this dissertation has been presented before for any other degree.

Dr Apsara A. P

**Kollam**



**A STUDY OF THE CHROMATOPHORES IN  
SELECTED ORNAMENTAL FISHES**

**DISSERATION**

*Submitted to the Fatima Mata National College, (Autonomous)*

*In partial fulfillment of the*

*Requirements for the award of the Degree of*

**BACHELOR OF SCIENCE**

**IN**

**ZOOLOGY**

Ann Mary	:	(U1816001)
Sibi Vijayan	:	(U1816002)
Soumya Jerome	:	(U1816003)
Ajaylal Krishna T	:	(U1816004)
Bibin Danial	:	(U1816005)
Ajina Suresh	:	(U1816008)
Aneesha Y	:	(U1816009)



**DEPARTMENT OF ZOOLOGY**

**FATIMA MATA NATIONAL COLLEGE (AUTONOMOUS), KOLLAM**

**JULY 2021**



## CERTIFICATE

This is to certify that this project entitled 'A STUDY OF THE CHROMATOPHORES IN SELECTED ORNAMENTAL FISHES' is an authentic record of the work carried out by Ann Mary (U1816001), Sibi Vijayan (U1816002), Soumya Jerome (U1816003), Ajaylal Krishna.T (U1816004), Bibin Danial (U1816005), Ajina Suresh (U1816008), Aneesha Y (U1816009) during the period of their study in the Department of Zoology, Fatima Mata National College (Autonomous), Kollam, under my supervision and guidance and that no part thereof has been presented earlier for any other degree .

**Mrs. Nisha Thomas P.**  
**Supervising Guide**

**Mrs. Nisha Thomas P.**  
**Head of the Department**  
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**F.M.N.College (Autonomous)**  
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HEAD, DEPARTMENT OF ZOOLOGY  
Fatima Mata National College (Autonomous)  
Kollam

**THE IMPACT OF COVID-19 ON THE LIFE OF HIGHER  
EDUCATION STUDENTS: CHALLENGES RELATED TO  
REMOTE (ONLINE) LEARNING AND OPPORTUNITIES  
FOR ADVANCING THE QUALITY OF EDUCATION**

*Project submitted to the University of Kerala in Partial fulfillment of the  
requirement for the Bachelor of Science Degree in Zoology*

**By**

<b>Name</b>	<b>Register No:</b>
<b>Kiran Thomas Mathew</b>	<b>U 1816006</b>
<b>Chinthalekshmi P S</b>	<b>U 1816012</b>
<b>Gopika J</b>	<b>U 1816013</b>
<b>Gopika Raj</b>	<b>U 1816014</b>
<b>Nirosha N Fernandez</b>	<b>U 1816016</b>
<b>Stephy Peter</b>	<b>U 1816017</b>
<b>Thanima Das</b>	<b>U 1816018</b>

**PG AND RESEARCH DEPARTMENT OF ZOOLOGY**



**FATIMA MATA NATIONAL COLLEGE (AUTONOMOUS),  
KOLLAM**

**JULY 2021**

## CERTIFICATE

This is to certify that this dissertation "The impact of COVID-19 on the life of higher education students: Challenges related to remote (online) learning and opportunities for advancing the quality of education" is an authentic record of group work carried out by, Kiran Thomas Mathew (U 1816006), Chinthalekshmi P S (U 1816012), Gopika J (U 1816013), Gopika Raj (U 1816014), Nirosha N Fernandez (U 1816016), Stephy Peter (U 1816017), Thanima Das (U 1816018) in partial fulfillment of the requirement for the B. Sc Degree in Zoology F. M. N. College, Kollam under my supervision and that no part thereof has been presented earlier for any other Degree.

*Nisha Thomas*  
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**Ms. Nisha Thomas P**

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*Sarlin P.J*  
26/07/2021

**DR. SARLIN. P.J**  
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**Analysis of proteins from tilapia (*Oreochromis mossambicus*) and  
GIFT tilapia (*Oreochromis niloticus*) using Sodium Dodecyl  
Sulphate Polyacrylamide Gel Electrophoresis (SDS PAGE)**

**DISSERTATION**

**Submitted to the University of Kerala**

**in partial fulfillment of the**

**requirements for the award of the degree of**

**BACHELOR OF SCIENCE IN ZOOLOGY**

**Tina Terence : U1816019**

**Varija S : U1816020**

**Binuraj R : U1816021**

**Aabi Anilan : U1816022**

**Aiswarya Mary A : U1816023**

**Akhila V : U1816024**

**Aleena Andrew : U1816025**



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## DEPARTMENT OF ZOOLOGY

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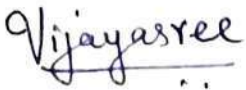
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## CERTIFICATE

This is to certify that dissertation entitled “Analysis of proteins from tilapia (*Oreochromis mossambicus*) and GIFT tilapia (*Oreochromis niloticus*) using Sodium Dodecyl Sulphate Polyacrylamide Gel Electrophoresis (SDS PAGE)” is an authentic record of the work carried out by Tina Terence (U1816019), Varija S (U1816020), Binuraj R (U1816021), Aabi Anilan (U1816022), Aiswarya Mary A (U1816023), Akhila V (U1816024) and Aleena Andrew (U1816025) under my supervision and guidance as a part of University of Kerala in partial fulfillment of the Degree of Bachelor of Science in Zoology.



Dr. Vijayasree A. S.

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Department of Zoology,

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HEAD, DEPARTMENT OF ZOOLOGY  
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**Analysis of protein diversity in *Penaeus monodon* and *Penaeus indicus* from different geographical localities in Kerala**

**DISSERTATION**

Submitted to the University of Kerala  
in partial fulfillment of the  
requirements for the award of the degree of  
**BACHELOR OF SCIENCE IN ZOOLOGY**

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Anitha M : U1816031

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**PG & RESEARCH DEPARTMENT OF ZOOLOGY**

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**JULY 2021**

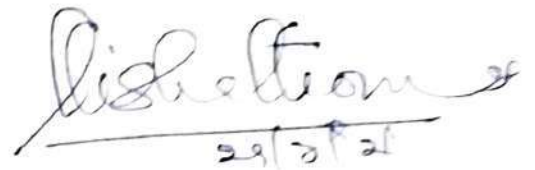
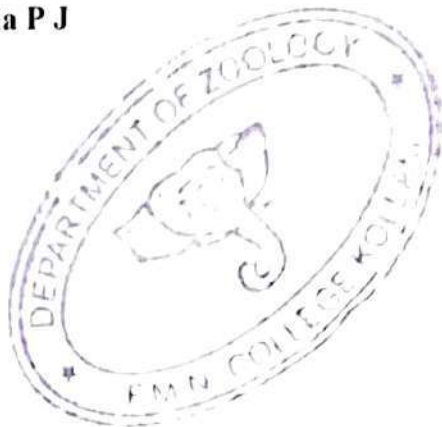
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**CERTIFICATE**

This is to certify that the dissertation entitled “Analysis of protein diversity in *Penaeus monodon* and *Penaeus indicus* from different geographical localities in Kerala” is an authentic record of group work carried out by Ancy Santhosh (U1816027), Aneesha Joy (U1816028), Aneesya S Raj (U1816029), Anitha M (U1816031), Anjali Adolphous (U1816032), Abhimanyu Santhosh (U1816051) and Sibin C (U1816007) under my supervision and guidance as a part of University of Kerala in partial fulfillment of the Degree of Bachelor of Science in Zoology.



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HEAD, DEPARTMENT OF ZOOLOGY  
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KOLLAM

**A Preliminary Assessment of the Bacteriological Quality of Water at  
Fatima Mata National College, Kollam**

**DISSERTATION**

**Submitted to the University of Kerala in partial fulfilment of the requirements  
for the award of the degree of**

**BACHELOR OF SCIENCE IN ZOOLOGY**

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**POST GRADUATE AND RESEARCH DEPARTMENT OF ZOOLOGY**

**FATIMA MATA NATIONAL COLLEGE(AUTONOMOUS), KOLLAM**

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**CERTIFICATE**

This is to certify that the dissertation entitled “**A Preliminary Assessment of the Bacteriological Quality of Water at Fatima Mata National College, Kollam**” is an authentic record of the work carried out by Nicymol Shaji (U1816039), Poojalekshmi T S (U1816040), Salma Salim (U1816041), Seena Xavier (U1816042), Shijina T (U1816043), Soofiya K Yoosuf (U1816044) and Bijinlal (U1816053) under my supervision and guidance as a part of the University of Kerala in partial fulfilment of the Degree of Bachelor of Science in Zoology.

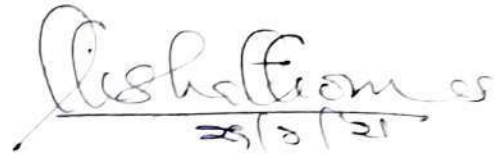


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**A STUDY ON TWO SPECIES OF BIVALVES COLLECTED  
FROM SAMBRANIKODI AND DALAVAPURAM REGIONS OF  
ASHTAMUDI LAKE IN KOLLAM**

**PROJECT WORK**

*Submitted to the University of Kerala in partial fulfillment of the  
requirements for the award of the Degree of*  
**BACHELOR OF SCIENCE IN ZOOLOGY**

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<b>Ashitha L S</b>	<b>U1816035</b>
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<b>Akash S Kumar</b>	<b>U1816052</b>



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**FATIMA MATA NATIONAL COLLEGE (AUTONOMOUS), KOLLAM**

**JULY 2021**

PG AND RESEARCH DEPARTMENT OF ZOOLOGY

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## CERTIFICATE

This is to certify that this project entitled "A Study on two species of Bivalves collected from Sambranikodi and Dalavapuram regions of Ashtamudi Lake in Kollam" is an authentic record of the group work carried out by **Anuja Nath R (U1816033)**, **Arsha R (U1816034)**, **Ashitha L S (U1816035)**, **Devika S (U1816036)**, **Greeshha Jiji (U1816037)**, **Helen E Fernandez (U1816038)** **Akash S Kumar (U1816052)** under my supervision and guidance as a part of University of Kerala in partial fulfillment of the Degree of Bachelor of Science in Zoology and no part of this work thereof has been submitted for any other degree in any University.

*Nisha Thomas P.*  
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**Effect of different salinity levels on the hatchability of *Artemia* cyst**

**DISSERTATION**

**Submitted to the University of Kerala**

**in the partial fulfillment of the**

**requirements for the award of degree of**

**BACHELOR OF SCIENCE IN ZOOLOGY**

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<b>Sweety Solomon</b>	<b>:</b>	<b>U1816048</b>
<b>T G Malavika</b>	<b>:</b>	<b>U1816049</b>
<b>Danty D Nylous</b>	<b>:</b>	<b>U1816054</b>
<b>Robin Paul</b>	<b>:</b>	<b>U1816055</b>



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**JULY 2021**



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## **CERTIFICATE**

This is to certify that the dissertation entitled “**Effect of different salinity levels on the hatchability of *Artemia* cyst**” is an authentic record of the group work carried out by Sruthy Vikraman (U1816045), Suhana S. (U1816046), Swathy Luois (U1816047), Sweety Solomon (U1816048), T. G. Malavika (U1816049), Danty D. Nylous (U1816054) and Robin Paul (U1816055), Department of Zoology, Fatima Mata National College (Autonomous), Kollam, as a part of University of Kerala in partial fulfilment of the Degree of Bachelor of Science in Zoology, under my supervision and guidance and it has not been submitted anywhere else for any other degree, diploma or title.

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*Manju Sebastine*

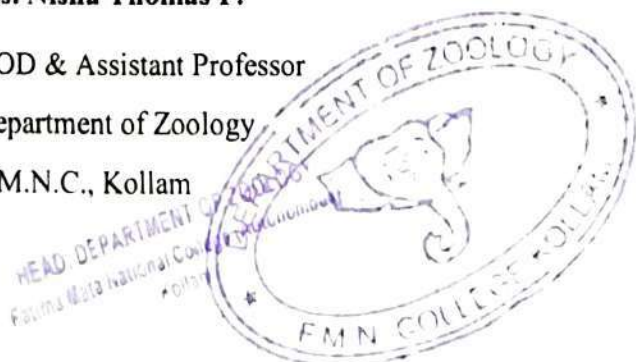
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# **DROWSINESS DETECTION USING MACHINE LEARNING ALGORITHM**

## **MAJOR PROJECT**

*Submitted in partial fulfillment of the requirements for the award of  
the Degree of Bachelor of Computer Application of University of Kerala*

*by*

ANJANA S

U1845002

LEKSHMI SASIDHARAN

U1845008

DERRICK ROY

U1845021

ATHUL S JOHN

U1845020

ALAN JOY

U1845015



**DEPARTMENT OF COMPUTER SCIENCE**

**FATIMA MATA NATIONAL COLLEGE (AUTONOMOUS)**

**KOLLAM – 691001**

**2018-2021**

# **EFFICIENT JOINT ENCRYPTION FOR MEDICAL IMAGES SECURITY**

## **MAJOR PROJECT**

*Submitted in partial fulfillment of the requirements for the award of  
the Degree of Bachelor of Computer Application of University of Kerala*

*by*

STENIYA SAJI

U1845012

SALI J

U1845009

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U1845016

MIDHUN M

U1845027

RICHARD PETER JOY

U1845028



**DEPARTMENT OF COMPUTER SCIENCE**

**FATIMA MATA NATIONAL COLLEGE (AUTONOMOUS)**

**KOLLAM – 691001**

**2018-2021**

**CREDIT CARD FRAUD DETECTION**  
**USING MACHINE LEARNING ALGORITHM**  
**PROJECT REPORT**

*Submitted to the Department of Computer Science in partial fulfillment of the  
requirement for the award of degree*

***BACHELOR OF COMPUTER APPLICATION***

*Submitted By:*

BENSIAL	U1845003
SIMI M	U1845011
AROMAL R M	U1845017
JUAN ANTONIO	U1845026
SARATH S	U1845029



**DEPARTMENT OF COMPUTER SCIENCE**  
**FATIMA MATA NATIONAL COLLEGE**  
**(AUTONOMOUS), KOLLAM**

# **HEART DISEASE PREDICTION PORTAL**

## **MAJOR PROJECT**

*Submitted in partial fulfillment of the requirements for the award of the  
Degree of Bachelor Computer Application of University of Kerala*

*By*

<b>Ashiq S</b>	<b>U1845018</b>
<b>Ajmal Iqbal</b>	<b>U1845013</b>
<b>Gokul Suresh</b>	<b>U1845024</b>
<b>Devika S Pillai</b>	<b>U1845005</b>



**DEPARTMENT OF COMPUTER SCIENCE**

**FATIMA MATA NATIONAL COLLEGE (AUTONOMOUS)**

**KOLLAM – 691001**

**2018-2021**

# **HUMANOID ROBOT- MOFIZA2.0**

## **MAJOR PROJECT**

*Submitted in partial fulfillment of the requirements for the award of the  
Degree of Bachelor of Computer Application of University of Kerala*

*by*

**ATHUL DEV (U1845019)**

**AKHIL JOSE (U1845014)**

**KAJOL MOTIRAM PHADATARE(U1845007)**

**SHAFNA S(U1845010)**



**DEPARTMENT OF COMPUTER SCIENCE  
FATIMA MATA NATIONAL COLLEGE (AUTONOMOUS)  
KOLLAM – 691001  
2018-2021**

**CENTRALISED INTRA COLLEGE STUDENT  
EVALUATION SYSTEM**

*Submitted in partial fulfilment for the award of the  
degree of Bachelor of Computer Application.*

**Submitted by:**

**ANGEL JOSEPH(U1845001)**

**EPHRON GEORGE (U1845022)**

**FROYD DCRUZ(U1845023)**

**GREESHMA GIRISH(U1845005)**

**SUDHI CHANDRAN(U1845030)**



**DEPARTMENT OF COMPUTER SCIENCE  
FATIMA MATA NATIONAL COLLEGE  
(AUTONOMOUS), KOLLAM**

**2018-2021**



**FATIMA MATA NATIONAL COLLEGE (AUTONOMOUS), KOLLAM**

**DEPARTMENT OF ECONOMICS**

**III DC (A), SEMESTER VI (2021)**

**PROJECT GROUPS**

<b>GROUP 1</b>		
<b>CANDIDATE CODE</b>	<b>NAME</b>	
U1823001	JEEN J	Mr Ratheesh C A STUDY ON ONLINE CONSUMPTION BEHAVIOUR OF COLLEGE STUDENTS - WITH SPECIAL REFERENCE TO KOLLAM.
U1823014	AKHILA S	
U1823026	HALEEMA R	
U1823051	SRUTHI RAJ	
U1823060	ANANTHAKRISHNAN A (LEADER)	
<b>GROUP 2</b>		
U1823002	ANNA MARIE A	Ms Neethu M Mathews A STUDY ON THE IMPACT OF PETROL PRICE HIKE AND IT'S EFFECT ON CONSUMER
U1823015	AMRUTHA CHANDRAN	
U1823027	IMMACULATE (LEADER)	
U1823052	SURABHA JOHNSON	
U1823071	VISHNU NANDAN	
<b>GROUP 3</b>		
U1823003	DEVIKA PRAMOD	Ms Neethu M Mathews A Study on the Effectiveness of Online Education during the pandemic of COVID-19 with special reference to selected Arts and Science colleges of Kollam District
U1823016	ANGEL ALBERT	
U1823028	JENSY JOSE	
U1823040	NESIYA N	
U1823067	NIKHIL KOSHY GEORGE (LEADER)	
<b>GROUP 4</b>		
U1823004	FATHIMA S	Dr Mary Antony A STUDY ON SOCIO ECONOMIC AND HEALTH CONDITIONS OF PRIVATE SCHOOL FEMALE TEACHERS IN KOLLAM DISTRICT
U1823029	JINCY R SILVA (LEADER)	
U1823041	NIJANA N	
U1823054	ABIN F	
U1823066	MUHAMMED SALMAN SHA	



<b>GROUP 5</b>		
U1823018	ANN VENUS BALDWIN	Ms Shalini Mathews A STUDY ON CUSTOMER SATISFACTION TOWARDS E-BANKING WITH SPECIAL REFERENCE TO SBI
U1823030	JOHA G S (LEADER)	
U1823042	PRIVI S	
U1823055	ADARSH AJAY	
U1823068	NITHIN M	
<b>GROUP 6</b>		
U1823006	JANCY JAMES	Ms Shalini Mathews
U1823019	ATHIRA M G	
U1823043	PRIYANKA R	
U1823056	AJMAL AHMMED N (LEADER)	A STUDY ON THE SOCIO ECONOMIC CONDITION OF CASHEW WORKERS WITH SPECIAL REFERENCE TO KOTTAMKARA GRAMA PANCHAYATH , KOLLAM DISTRICT
U1823069	RAHUL R	
<b>GROUP 7</b>		
U1823007	JOICY CHERIYAN	Ms Stella S A STUDY ON THE IMPACT OF ONLINE ADVERTISING ON COLLEGE STUDENTS' CONSUMPTION WITH SPECIAL REFERENCE TO KOLLAM DISTRICT
U1823020	AMITHA N S	
U1823032		
U1823044	RAICHAL ROY(LEADER)	
U1823057	AKHIL BABU C S	
<b>GROUP 8</b>		
U1823008	MONISHA MOHAN	Dr Titus A R HAZARDS CAUSED BY THE ENVIRONMENTAL POLLUTION IN THE NEIGHBOURHOOD OF KMML WITH REFERENCE TO PANMANA
U1823021	BEEMAMOLE S	
U1823033	JYOTHI JOSE	
U1823045	RESHMA B S	
U1823058	AKSHAY T BABU(LEADER)	

<b>GROUP 9</b>		
U1823010	SHABNASMOL N	Dr Titus A R A study on the impact of Integrated Child Development Scheme and the growth of Anganwadis with special reference to Mayyanad village.
U1823022	CHRISTEENA CHRISTOPHER	
U1823034	MANEESHA M (LEADER)	
U1823046	SANDRA B	
U1823059	AMAL V KRISHNAN	
<b>GROUP 10</b>		
U1823011	SMITHA Y	Ms Stella S A study on Consumption of Over-The-Top(OTT) Platforms and Streaming Applications- Pre and Post Covid Lockdown Among College Students with special reference to Kollam Corporation.
U1823023	EALU MERIN (LEADER)	
U1823035	MARIYA RANI J	
U1823048	SARANYA S	
U1823063	CHRISTO JOSEPH	
<b>GROUP 11</b>		
U1823012	ANTONY VINCENT	Dr Mary Antony A STUDY ON DEMONETIZATION AND ITS EFFECT ON BANKING SECTOR WITH SPECIAL REFERENCE TO SBI
U1823024	FATHIMATH SEBA KALAM	
U1823036	MARY ROY	
U1823049	SNEHA JOY(LEADER)	
U1823013	ARJUN PRASAD	
<b>GROUP 12</b>		
U1823039	NEETHU S	Ms Shalini Mathews A STUDY ON CONSUMERS BUYING BEHAVIOUR TOWARDS ORGANIC FOOD - WITH SPECIAL REFERENCE TO KOLLAM
U1823025	FEBI S PANICKER (LEADER)	
U1823037	MUHSINA S	
U1823061	ARUN PRASAD	
U1823062	ASHIK MARTIN	

<b>GROUP 13</b>		
<b>U1823064</b>	<b>GEO DAS</b>	<b>,Ms Minu Elza R Role of Information Communication Technologies for Women Empowerment</b>
<b>U1823053</b>	<b>ABHIJITH RAJ R (LEADER)</b>	
<b>U1823017</b>	<b>ANITTA S</b>	
<b>U1823005</b>	<b>HARITHA DAS A</b>	
<b>U1823031</b>	<b>JOSHNA J</b>	

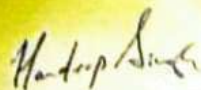
# Certificate of Internship

*This is to certify that*

**Mr./Ms.** ANN MARY A NETTO

**of** DEPT OF ZOOLOGY, FMN COLLEGE

has successfully completed the **15 Days Online Internship Programme** on **Bioinformatics Tools & Software** organized by Makeintern (E-Cell IIT Kharagpur) from 16<sup>th</sup> to 30<sup>th</sup> November 2020, in association with **Fatima Mata National College, Kollam.**

A handwritten signature in black ink, appearing to read 'Hardeep Singh Puri'.

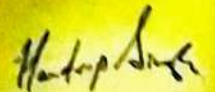
# Certificate of Internship

*This is to certify that*

**Mr./Ms.** JAISHA HILARIAN D'CRUZ

**of** DEPARTMENT OF ZOOLOGY, FMN COLLEGE

has successfully completed the **15 Days Online Internship Programme** on **Bioinformatics Tools & Software** organized by Makeintern (E-Cell IIT Kharagpur) from 16<sup>th</sup> to 30<sup>th</sup> November 2020, in association with **Fatima Mata National College, Kollam.**

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**Hardeep Singh Puri**  
Director  
Makeintern.com

# Certificate of Internship

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**Mr./Ms.** GLAZEMOL GLADUS

**of** DEPT OF ZOOLOGY, FMN COLLEGE

has successfully completed the **15 Days Online Internship Programme** on **Bioinformatics Tools & Software** organized by Makeintern (E-Cell IIT Kharagpur) from 16<sup>th</sup> to 30<sup>th</sup> November 2020, in association with **Fatima Mata National College, Kollam.**

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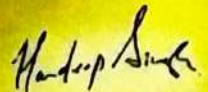
# Certificate of Internship

*This is to certify that*

**Mr./Ms.** NEELIMA M

**of** DEPARTMENT OF ZOOLOGY , FMN COLLEGE

has successfully completed the **15 Days Online Internship Programme** on **Bioinformatics Tools & Software** organized by Makeintern (E-Cell IIT Kharagpur) from 16<sup>th</sup> to 30<sup>th</sup> November 2020, in association with **Fatima Mata National College, Kollam.**

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# Certificate of Internship

This is to certify that

Mr./Ms. SRUTHY G.S

of DEPARTMENT OF ZOOLOGY , FMN COLLEGE

has successfully completed the **15 Days Online Internship Programme** on **Bioinformatics Tools & Software** organized by Makeintern (E-Cell IIT Kharagpur) from 16<sup>th</sup> to 30<sup>th</sup> November 2020, in association with **Fatima Mata National College, Kollam.**

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Director  
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~~Mr.~~/Ms. KESIYA S

of DEPT OF ZOOLOGY, FMN COLLEGE

has successfully completed the **15 Days Online Internship Programme** on **Bioinformatics Tools & Software** organized by Makeintern (E-Cell IIT Kharagpur) from 16<sup>th</sup> to 30<sup>th</sup> November 2020, in association with **Fatima Mata National College, Kollam.**

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# Certificate of Internship

*This is to certify that*

**Mr./Ms.** OYGIAN J

**of** DEPARTMENT OF ZOOLOGY, FMN COLLEGE

**has successfully completed the 15 Days Online Internship Programme on Bioinformatics Tools & Software organized by Makeintern (E-Cell IIT Kharagpur) from 16<sup>th</sup> to 30<sup>th</sup> November 2020, in association with Fatima Mata National College, Kollam.**

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**Hardeep Singh Pur**  
Director  
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# Certificate of Internship

*This is to certify that*

**Mr./Ms.** ATHIRA · R

**of** DEPARTMENT OF ZOOLOGY , FMN COLLEGE

has successfully completed the **15 Days Online Internship Programme**  
on **Bioinformatics Tools & Software** organized by Makeintern  
(E-Cell IIT Kharagpur) from 16<sup>th</sup> to 30<sup>th</sup> November 2020,  
in association with **Fatima Mata National College, Kollam.**

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# Certificate of Internship

*This is to certify that*

**Mr./Ms.** DARSHITHA · S

**of** DEPARTMENT OF ZOOLOGY, FMN COLLEGE

has successfully completed the **15 Days Online Internship Programme** on **Bioinformatics Tools & Software** organized by Makeintern (E-Cell IIT Kharagpur) from 16<sup>th</sup> to 30<sup>th</sup> November 2020, in association with **Fatima Mata National College, Kollam.**

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Hardeep Singh Puri  
Director  
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# Certificate of Internship

*This is to certify that*

**Mr./Ms.** SUMITHA RANI

**of** DEPT OF ZOOLOGY, FMN COLLEGE

has successfully completed the **15 Days Online Internship Programme** on **Bioinformatics Tools & Software** organized by **Makeintern** (E-Cell IIT Kharagpur) from **16<sup>th</sup> to 30<sup>th</sup> November 2020**, in association with **Fatima Mata National College, Kollam.**



**Hardeep Singh Puri**  
Director  
Makeintern.com

# Certificate of Internship

*This is to certify that*

~~Mr.~~ / Ms. MARIA JENIFER A

of DEPT OF ZOOLOGY, FMN COLLEGE

has successfully completed the **15 Days Online Internship Programme** on **Bioinformatics Tools & Software** organized by Makeintern (E-Cell IIT Kharagpur) from 16<sup>th</sup> to 30<sup>th</sup> November 2020, in association with **Fatima Mata National College, Kollam.**



Hardeep Singh Puri  
Director  
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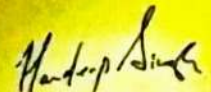
# Certificate of Merit

*This is to certify that*

**Mr./Ms.** USHA A.U

**of** ST THOMAS COLLEGE, THRISSUR

has successfully completed the **15 Days Online Internship Programme** on **Bioinformatics Tools & Software** organized by Makeintern (E-Cell IIT Kharagpur) from 16<sup>th</sup> to 30<sup>th</sup> November 2020, in association with **Fatima Mata National College, Kollam.**

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**Hardeep Singh Puri**  
Director  
Makeintern.com

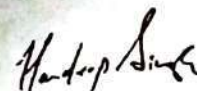
# Certificate of Internship

*This is to certify that*

Mr./Ms. NIJAN

of DEPARTMENT OF ZOOLOGY , FMN COLLEGE

has successfully completed the **15 Days Online Internship Programme** on **Bioinformatics Tools & Software** organized by **Makeintern** (E-Cell IIT Kharagpur) from **16<sup>th</sup> to 30<sup>th</sup> November 2020**, in association with **Fatima Mata National College, Kollam.**



**Hardeep Singh Puri**  
Director  
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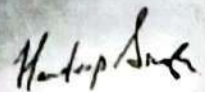
# Certificate of Internship

*This is to certify that*

**Mr./Ms.** NIKITHA · N

**of** DEPARTMENT OF ZOOLOGY, FMN COLLEGE

has successfully completed the **15 Days Online Internship Programme** on **Bioinformatics Tools & Software** organized by **Makeintern** (E-Cell IIT Kharagpur) from **16<sup>th</sup> to 30<sup>th</sup> November 2020**, in association with **Fatima Mata National College, Kollam.**



**Hardeep Singh Puri**  
Director  
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# Certificate of Internship

*This is to certify that*

Mr./Ms. AKSHAY M.A

of DEPARTMENT OF ZOOLOGY, FMN COLLEGE

has successfully completed the **15 Days Online Internship Programme**  
on **Bioinformatics Tools & Software** organized by Makeintern  
(E-Cell IIT Kharagpur) from 16<sup>th</sup> to 30<sup>th</sup> November 2020,  
in association with **Fatima Mata National College, Kollam.**



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Director  
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# Certificate of Internship

*This is to certify that*

**Mr./Ms.** AMALA M S

**of** DEPARTMENT OF ZOOLOGY, FMN COLLEGE

has successfully completed the **15 Days Online Internship Programme** on **Bioinformatics Tools & Software** organized by Makeintern (E-Cell IIT Kharagpur) from **16<sup>th</sup> to 30<sup>th</sup> November 2020**, in association with **Fatima Mata National College, Kollam.**



**Hardeep Singh Puri**  
Director  
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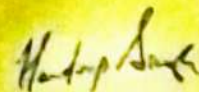
# Certificate of Internship

*This is to certify that*

**Mr./Ms.** VARSHA JIJU

**of** DEPARTMENT OF BOTANY, S B COLLEGE

has successfully completed the **15 Days Online Internship Programme**  
on **Bioinformatics Tools & Software** organized by Makeintern  
(E-Cell IIT Kharagpur) from 16<sup>th</sup> to 30<sup>th</sup> November 2020,  
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**Hardeep Singh Puri**  
Director  
Makeintern.com

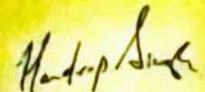
# Certificate of Internship

*This is to certify that*

**Mr./Ms.** NEETHU · M

**of** DEPARTMENT OF ZOOLOGY, ST. THOMAS COLLEGE

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**Hardeep Singh Puri**  
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Makeintern.com

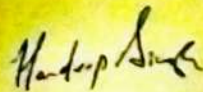
# Certificate of Merit

*This is to certify that*

**Mr./Ms.** WAFHA K.A.

**of** DEPT OF BOTANY, FMNC

has successfully completed the **15 Days Online Internship Programme** on **Bioinformatics Tools & Software** organized by Makeintern (E-Cell IIT Kharagpur) from **16<sup>th</sup> to 30<sup>th</sup> November 2020**, in association with **Fatima Mata National College, Kollam.**

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**Hardeep Singh Pur**  
Director  
Makeintern.com

# Certificate of Internship

*This is to certify that*

Mr./Ms. ALEN SHAJI

of DEPARTMENT OF BOTANY , FMN COLLEGE

has successfully completed the **15 Days Online Internship Programme** on **Bioinformatics Tools & Software** organized by Makeintern (E-Cell IIT Kharagpur) from 16<sup>th</sup> to 30<sup>th</sup> November 2020, in association with **Fatima Mata National College, Kollam.**

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Director  
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# Certificate of Internship

*This is to certify that*

Mr./Ms. MEGHA ANNA GEORGE

of DEPARTMENT OF BOTANY, FMN COLLEGE

has successfully completed the **15 Days Online Internship Programme**  
on **Bioinformatics Tools & Software** organized by Makeintern  
(E-Cell IIT Kharagpur) from 16<sup>th</sup> to 30<sup>th</sup> November 2020,  
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**Mr./Ms.** DHANALERSHMI

**of** DEPT OF BOTANY, FMN COLLEGE

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Hardeep Singh Puri  
Director  
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# Certificate of Merit

*This is to certify that*

Mr./Ms. JOE FREDY

of DEPARTMENT OF BOTANY, FMN COLLEGE

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Hardeep Singh Puri  
Director  
Makeintern.com

**FATIMA MATA NATIONAL COLLEGE**  
(AUTONOMOUS)  
**KOLLAM**

**Department of Economics**  
**Dissertation Details**

**Class: IV Semester (September 2020), MA Economics**

Sl. No	Candidate Code	Name of the Candidate	Title of the Dissertation
1.	P1823001	Ajitha J	Financial status marine fisher folk in Sakthikulangara
2.	P1823002	Akhila Alphonse	The effectiveness of Pmay on the lives of fishermen community-with special reference to vaddy division
3.	P1823003	Anju Ashok	Urban waste disposal management a study in attingal municipality
4.	P1823004	Ashlie K Abraham	The Economic Impact of Tourism Industry : A Study with Reference to Kerala Economy
5.	P1823005	Athira Ramachandran	Socio economic status of tribal in Aryankavu panchayath with special reference to malai pandaram
6.	P1823006	Celin J Serafin	Demand for cosmetics with special reference to female college students
7.	P1823007	Dhanya Joseph	A study on the socio economic status of women fish vendors in vaddy fishing harbour in kollam district
8.	P1823008	Jincy Vijayan	Role of NGO's in Women Empowerment with special reference to QSSS
9.	P1823009	Jency Solomon	Saving habits in rural areas with special reference to mayyanad panjayath in kollam district
10.	P1823010	Jijimol J	Problems and prospects of marine industries in kerala,with special reference to neendakara ,kollam district
11.	P1823012	Jobitta Jose	Case study on customer satisfaction in cooperative bank with special reference to kollam district
12.	P1823013	Jyothilekshmi M	Women Empowerment through MGNREGA: A Study with Special Reference to Poothakkulam Grama Panchayat
13.	P1823014	Mahitha Raju	Development of Fishermen Community under FCDP- A study with special reference to Pallihottam Division
14.	P1823015	Maria Sheethal J	Household Expenditure On School Education - A Study With Reference to Pullikkada Area in Kollam District
15.	P1823016	Meera M	Socio-economic condition of slum dwellers with special reference to pullikada colony in kollam corporation.
16.	P1823017	Nincy F	A study on the socio-economic conditions of porters with special reference to Kollam railway station
17.	P1823018	Reeba Raj	Socio economic conditions of women workers in apparel retail stores in Kollam corporation
18.	P1823019	Remya Mary Reynold	Impact of E-commerce on retail apparel stores with special reference to Kollam corporation

19.	P1823020	Rinu Cyril	The socio-economic conditions of Matsyafed beneficiaries -with reference to marine fish landing centre-Vaddy
20.	P1823021	Sharit Thomas	Online shopping behaviour of youth in Kollam district with special reference to Kollam corporation
21.	P1823022	Sony Sebastian	A study on the job satisfaction of anganwadi workers with special reference to chavara
22.	P1823023	Suparna S	Educated unemployment among urban women - A study with reference in kollam corporation
23.	P1823024	Arun Hamilton	Socio-economic conditions of farmers engaged In aqua culture with special reference to Munroethuruthu
24.	P1823025	Amal S	Role of Accredited Social Health Activist (ASHA) workers in improving Rural Health - A Study with special refence to Anchukallumoodu area of Kollam Corporation.
25.	P1723010	Jasmin B	A study on the socio - economic and health conditions of residents of kureepuzha dump yard in kollam district

Head of the Department

**Determination of FTIR Spectra and Electrophoretic  
mapping of Gelatin: A Biopolymer extracted from Squid  
(*Uroteuthis duvaucelii*)**

**DISSERTATION**

*Submitted to the University of Kerala in partial fulfillment of the  
Requirements for the award of the Degree of*

**MASTER OF SCIENCE IN ZOOLOGY**

**NAME      AMALA M S**

**REG. NO    P 1915001**

**COURSE CODE 19PZO45**



**POST GRADUATE & RESEARCH DEPARTMENT OF ZOOLOGY,  
FATIMA MATA NATIONAL COLLEGE (AUTONOMOUS),  
KOLLAM-691001**

**JULY 2021**

**PG AND RESEARCH DEPARTMENT OF ZOOLOGY  
FATIMA MATA NATIONAL COLLEGE (AUTONOMOUS), KOLLAM**



**CERTIFICATE**

This is to certify that dissertation entitled “ **Determination of FTIR Spectra and Electrophoretic mapping of Gelatin: A Biopolymer extracted from Squid (*Uroteuthis duvaucelii*)**” is an authentic record of the work carried out by **AMALA M S (P 1915001)** under my supervision and guidance in Fatima Mata National College, (Autonomous), Kollam, in partial fulfillment of the requirements for the Master of Science in Zoology and no part of this work thereof has been submitted for any other degree in any University.

**Ms. Nisha Thomas P.**

Head of the Department

FMN College, Kollam

**DR. SARLIN. P.J**  
Assistant Professor  
Department of Zoology  
Fatima Mata National College  
(Autonomous), Kollam

HEAD DEPARTMENT OF ZOOLOGY  
Fatima Mata National College (Autonomous)  
Kollam



# **MOLECULAR APPROACH TO THE IDENTIFICATION OF FISH FINGERLINGS AND ITS PHYLOGENETIC ANALYSIS**

**DISSERTATION**

*Submitted to the University of Kerala*  
*In partial fulfillment of the*  
*Requirements for the award of the Degree of*  
**MASTER OF SCIENCE**  
**IN**  
**ZOOLOGY**

**ANN MARY A NETTO**

**REG. NO. – P1915002**

**COURSE CODE – 19PZ045**



**PG AND RESEARCH DEPARTMENT OF ZOOLOGY,  
FATIMA MATA NATIONAL COLLEGE (AUTONOMOUS), KOLLAM**

**JULY 2021**

PG AND RESEARCH DEPARTMENT OF ZOOLOGY  
FATIMA MATA NATIONAL COLLEGE (AUTONOMOUS), KOLLAM



**CERTIFICATE**

This is to certify that dissertation entitled “**Molecular Approach To The Identification Of Fish Fingerlings And Its Phylogenetic Analysis**” is an authentic record of the work carried out by Ms. Ann Mary A Netto (Reg.No. - P1915002) under my supervision and guidance in Fatima Mata National College, (Autonomous), Kollam, in partial fulfillment of the requirements for the Master of Science in Zoology and no part of this work thereof has been submitted for any other degree in any University.

**Dr. Sr. Rose Gregoria P J**

Assistant Professor

Supervising Teacher

FMN College, Kollam

**Prof. Nisha Thomas P.**

Head of the Department

FMNC, Kollam

HEAD, DEPARTMENT OF ZOOLOGY  
Fatima Mata National College (Autonomous)  
Kollam





**MOLECULAR SYSTEMATICS OF SELECTED  
FRESHWATER FISHES OF SASTHAMKOTTA LAKE**

**DISSERTATION**

*Submitted to the University of Kerala*

*In partial fulfillment of the*

*Requirements for the award of the Degree of*

**MASTER OF SCIENCE**

**IN**

**ZOOLOGY**

**ATHIRA R**

**REG. NO – P1915003**

**COURSE CODE – 19PZO45**



**PG AND RESEARCH DEPARTMENT OF ZOOLOGY,  
FATIMA MATA NATIONAL COLLEGE (AUTONOMOUS), KOLLAM  
JULY 2021**

PG AND RESEARCH DEPARTMENT OF ZOOLOGY  
FATIMA MATA NATIONAL COLLEGE (AUTONOMOUS), KOLLAM



**CERTIFICATE**

This is to certify that dissertation entitled “**Molecular Systematics of Selected Freshwater Fishes Of Sasthamkotta Lake**” is an authentic record of the work carried out by Ms. Athira R (Reg.No. - P1915003) under my supervision and guidance in Fatima Mata National College, (Autonomous), Kollam, in partial fulfillment of the requirements for the Master of Science in Zoology and no part of this work thereof has been submitted for any other degree in any University.

**Dr. Sr. Rose Gregoria P J**

Assistant Professor

Supervising Teacher

FMN College, Kollam.

**Prof. Nisha Thomas P.**

Head of the Department

FMNC, Kollam

PG AND RESEARCH DEPARTMENT OF ZOOLOGY  
FATIMA MATA NATIONAL COLLEGE (AUTONOMOUS), KOLLAM



**A COMPARATIVE STUDY ON  
THE PROXIMATE NUTRIENT COMPOSITION OF TWO  
BIVALVE SPECIES OF DALAVAPURAM REGION  
OF ASHTAMUDI LAKE**

**DISSERTATION**

*Submitted to the University of Kerala In partial fulfillment of the*

*Requirements for the award of the Degree of*

**MASTER OF SCIENCE IN ZOOLOGY**

**BY**

**DARSHITHA S**

**CANDIDATE CODE : P1915004**

**COURSE CODE : 19PZO45**



**POST GRADUATE DEPARTMENT OF ZOOLOGY,  
FATIMA MATA NATIONAL COLLEGE (AUTONOMOUS), KOLLAM-691001**

**JULY 2021**



**PG AND RESEARCH DEPARTMENT OF ZOOLOGY  
FATIMA MATA NATIONAL COLLEGE (AUTONOMOUS), KOLLAM**

**Dr. Dafina Wilfred**  
**M.Sc., M.Phil., Ph.D**

**Phone (M):9895079709**  
**Email: wdafina@gmail.com**

**CERTIFICATE**

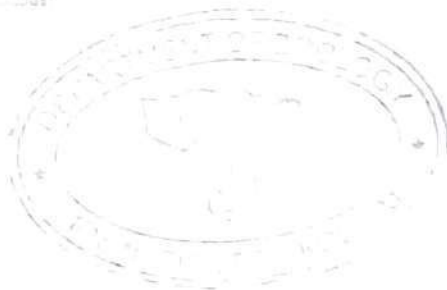
This is to certify that dissertation entitled " A COMPARATIVE STUDY ON THE PROXIMATE NUTRIENT COMPOSITION OF TWO BIVALVE SPECIES OF DALAVAPURAM REGION OF ASHTAMUDI LAKE " is an authentic record of the work carried out by DARSHITHA S (*Candidate code : P1915004*) under my supervision and guidance in Fatima Mata National College, (Autonomous), Kollam, in partial fulfillment of the requirements for the Master of Science in Zoology and no part of this work thereof has been submitted for any other degree in any University.

*Nisha Thomas P.*  
3/8/21

**Mrs. Nisha Thomas P.**  
HOD & Assistant Professor  
FMN College, Kollam

*Dafina Wilfred*

**Dr. Dafina Wilfred**  
Assistant Professor  
Supervising Teacher  
FMN College, Kollam



**Determination of FTIR Spectra and Electrophoretic  
mapping of Gelatin: A Biopolymer extracted from Cuttle  
Fish (*Sepia pharaonis*)**

**DISSERTATION**

*Submitted to the University of Kerala in partial fulfillment of the  
Requirements for the award of the Degree of*

**MASTER OF SCIENCE IN ZOOLOGY**

**NAME GLAZEMOL GLADUS**

**REG. NO P 1915005**

**COURSE CODE 19PZO45**



**POST GRADUATE & RESEARCH DEPARTMENT OF ZOOLOGY,  
FATIMA MATA NATIONAL COLLEGE (AUTONOMOUS),  
KOLLAM-691001**

**JULY 2021**

**PG AND RESEARCH DEPARTMENT OF ZOOLOGY  
FATIMA MATA NATIONAL COLLEGE (AUTONOMOUS), KOLLAM**



**CERTIFICATE**

This is to certify that dissertation entitled "**Determination of FTIR Spectra and Electrophoretic mapping of Gelatin: A Biopolymer extracted from Cuttle Fish (*Sepia pharaonis*)**" is an authentic record of the work carried out by **GLAZEMOL GLADUS (P 1915005)** under my supervision and guidance in Fatima Mata National College, (Autonomous), Kollam, in partial fulfillment of the requirements for the Master of Science in Zoology and no part of this work thereof has been submitted for any other degree in any University.

**Ms. Nisha Thomas P.**

Head of the Department

FMN College, Kollam

**DR. SARLIN. P.J**  
Assistant Professor  
Department of Zoology  
Fatima Mata National College  
(Autonomous), Kollam

HEAD DEPARTMENT OF ZOOLOGY  
Fatima Mata National College (Autonomous)  
Kollam



**Incidence of *Vibrio cholerae* and *Escherichia coli*  
contamination in retailed chilled prawns sourced from two  
landing sites in Kollam**

**DISSERTATION**

*Submitted to the University of Kerala*

*In partial fulfillment of the*

*Requirements for the award of the Degree of*

**MASTER OF SCIENCE**

**IN**

**ZOOLOGY**

***JAISHA HILARIAN D CRUZ***

***REG. NO – P1915006***

***COURSE CODE – 19PZ045***



***PG AND RESEARCH DEPARTMENT OF ZOOLOGY,  
FATIMA MATA NATIONAL COLLEGE (AUTONOMOUS), KOLLAM***

**JULY 2021**

PG AND RESEARCH DEPARTMENT OF ZOOLOGY  
FATIMA MATA NATIONAL COLLEGE (AUTONOMOUS), KOLLAM



**CERTIFICATE**

This is to certify that dissertation entitled "**Incidence of *Vibrio cholerae* and *Escherichia coli* in retailed chilled prawns sourced from two landing sites in Kollam**" is an authentic record of the work carried out by Ms. Jaisha Hilarian D cruz (Reg No. - P1915006) under my supervision and guidance in Fatima Mata National College, (Autonomous), Kollam, in partial fulfillment of the requirements for the Master of Science in Zoology and no part of this work thereof has been submitted for any other degree in any University.

*Soshina Nathan*  
13/8/21

Dr. Soshina Nathan  
Supervising Teacher  
FMN College, Kollam

*Nisha Thomas P.*  
31/8/21

Prof. Nisha Thomas P.  
Head of the Department  
FMN College, Kollam



HEAD OF DEPARTMENT OF ZOOLOGY  
FATIMA MATA NATIONAL COLLEGE (AUTONOMOUS)  
KOLLAM



**Incidence of *Escherichia coli* contamination in retailed chilled fish  
sourced from two landing sites in Kollam**

**DISSERTATION**

*Submitted to the University of Kerala*

*In partial fulfillment of the*

*Requirements for the award of the Degree of*

**MASTER OF SCIENCE**

**IN**

**ZOOLOGY**

***Kesiya.S***

***Reg. No P1915007***

***COURSE CODE – 19PZ045***



***PG AND RESEARCH DEPARTMENT OF ZOOLOGY,  
FATIMA MATA NATIONAL COLLEGE (AUTONOMOUS), KOLLAM***

***July 2021***

PG AND RESEARCH DEPARTMENT OF ZOOLOGY,  
FATIMA MATA NATIONAL COLLEGE (AUTONOMOUS), KOLLAM



**CERTIFICATE**

This is to certify that the dissertation entitled "**Incidence of *Escherichia coli* contamination in retailed chilled fish sourced from two landing sites in Kollam**" is an authentic record of the work carried out by Ms. Kesiya. S (Reg.No P1915007) under my supervision and guidance in Fatima Mata National College, (Autonomous), Kollam, in partial fulfillment of the requirements for the Master of Science in Zoology and no part of this work there of has been submitted for any other degree in any University.

*Sathya*  
3/8/21

**Dr.Soshina Nathan**  
Supervising Teacher  
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3/8/21

**Prof. Nisha Thomas P**  
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**IDENTIFICATION OF BACTERIA IN *MUGIL  
CEPHALUS* (LINNAEUS, 1758) FROM DIFFERENT  
LOCATIONS USING MICROBIAL DNA AND SEQUENCING**

**DISSERTATION**

*Submitted to the University of Kerala*

*In partial fulfillment of the*

*Requirements for the award of the Degree of*

**MASTER OF SCIENCE**

**IN**

**ZOOLOGY**

**MARIAJENIFER A.**

**REG. NO – P1915008**

**COURSE CODE – 19PZ045**



**PG AND RESEARCH DEPARTMENT OF ZOOLOGY,  
FATIMA MATA NATIONAL COLLEGE (AUTONOMOUS), KOLLAM**

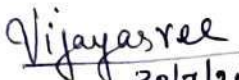
**JULY 2021**

PG AND RESEARCH DEPARTMENT OF ZOOLOGY  
FATIMA MATA NATIONAL COLLEGE (AUTONOMOUS), KOLLAM



**CERTIFICATE**

This is to certify that dissertation entitled “**Identification of bacteria in *Mugil cephalus (Linnaeus, 1758)* from different locations using Microbial DNA and Sequencing**” is an authentic record of the work carried out by Ms. Mariajenifer A (Reg. No. – P1915008) under my supervision and guidance in Fatima Mata National College, (Autonomous), Kollam, in partial fulfillment of the requirements for the Master of Science in Zoology and no part of this work thereof has been submitted for any other degree in any University.

  
30/7/2021  
Dr. Vijayasree A. S.

Supervising Teacher  
FMN College, Kollam

  
3/8/21

Mrs. Nisha Thomas P.  
Head of the Department  
FMN College, Kollam



HEAD DEPARTMENT OF ZOOLOGY  
FATIMA MATA NATIONAL COLLEGE (AUTONOMOUS)  
KOLLAM

**Effect of depuration on heavy metals (Cu, Cd and Pb) and  
contamination levels in *Paphia malabarica* (Dillwyn, 1817)  
in Ashtamudi lake, Kollam**

**DISSERATION**

Submitted to the University of Kerala

in the partial fulfillment of the

requirements for the award of degree of

**MASTER OF SCIENCE IN ZOOLOGY**

**CANDIDATE CODE - P1915010**

**COURSE CODE - 19PZO45**



**PG AND RESEARCH DEPARTMENT OF ZOOLOGY**

**FATIMA MATA NATIONAL COLLEGE (AUTONOMOUS), KOLLAM**

**JULY 2021**



FATIMA MATA NATIONAL COLLEGE (AUTONOMOUS)

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Dr. Manju Sebastine

Phone (M): 9349194869

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---

## CERTIFICATE

This is to certify that the dissertation entitled “**Effect of depuration on heavy metals (Cu, Cd and Pb) and contamination levels in *Paphia malabarica* (Dillwyn, 1817) in Ashtamudi lake, Kollam**” is an authentic record of work carried out by Nija N (P1915010) PG and Research Department of Zoology, Fatima Mata National College (Autonomous), Kollam, as a part of University of Kerala in partial fulfilment of the Degree of Master of Science in Zoology, under my supervision and guidance and it has not been submitted anywhere else for any other degree, diploma or title.

2/8/21

**Ms. Nisha Thomas P.**

HOD & Assistant Professor

Department of Zoology

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**Dr. Manju Sebastine**

Supervising Teacher &

Assistant Professor

Department of Zoology,

F.M.N.C., Kollam

**Effect of depuration on heavy metals (Cu, Cd and Pb) and  
contamination levels in *Villorita cyprinoides* (Gray, 1825)  
in Ashtamudi lake, Kollam**

**DISSERATION**

**Submitted to the University of Kerala**

**in the partial fulfillment of the**

**requirements for the award of degree of**

**MASTER OF SCIENCE IN ZOOLOGY**

**CANDIDATE CODE - P1915011**

**COURSE CODE – 19PZO45**



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**FATIMA MATA NATIONAL COLLEGE (AUTONOMOUS), KOLLAM**

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**Kollam, Kerala - 691001**

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## **CERTIFICATE**

This is to certify that the dissertation entitled “**Effect of depuration on heavy metals (Cu, Cd and Pb) and contamination levels in *Villorita cyprinoides* (Gray, 1825) in Ashtamudi lake, Kollam**” is an authentic record of work carried out by Nikitha (P1915011) PG and Research Department of Zoology, Fatima Mata National College (Autonomous), Kollam, as a part of University of Kerala in partial fulfilment of the Degree of Master of Science in Zoology, under my supervision and guidance and it has not been submitted anywhere else for any other degree, diploma or title.

21/2/21

**Ms. Nisha Thomas P.**

HOD & Assistant Professor

Department of Zoology

F.M.N.C., Kollam

For,

**Dr. Manju Sebastine**

Supervising Teacher &

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Department of Zoology,

F.M.N.C., Kollam



**ANALYSIS OF GENETIC VARIABILITY USING  
RANDOMLY AMPLIFIED POLYMORPHIC DNA (RAPD)  
MARKERS IN *NEPHROPIDAE* (CRUSTACEA)**

**DISSERTATION**

*Submitted to the University of Kerala*

*In partial fulfillment of the*

*Requirements for the award of the Degree of*

**MASTER OF SCIENCE**

**IN**

**ZOOLOGY**

**SRUTHY G. S.**

**REG. NO – P1915012**

**COURSE CODE – 19PZ045**



**PG AND RESEARCH DEPARTMENT OF ZOOLOGY,  
FATIMA MATA NATIONAL COLLEGE (AUTONOMOUS), KOLLAM**

**JULY 2021**

PG AND RESEARCH DEPARTMENT OF ZOOLOGY  
FATIMA MATA NATIONAL COLLEGE (AUTONOMOUS), KOLLAM



**CERTIFICATE**

This is to certify that dissertation entitled “**Analysis of genetic variability using randomly amplified polymorphic DNA (RAPD) markers in *Nephropidae* (Crustacea)**” is an authentic record of the work carried out by Ms. Sruthy G. S. (Reg. No. – P1915012) under my supervision and guidance in Fatima Mata National College, (Autonomous), Kollam, in partial fulfillment of the requirements for the Master of Science in Zoology and no part of this work thereof has been submitted for any other degree in any University.

*Vijayasree*  
30/7/2021

**Dr. Vijayasree A. S.**

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FMN College, Kollam

*Nisha Thomas P.*  
31/8/21

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HEAD, DEPARTMENT OF ZOOLOGY  
FATIMA MATA NATIONAL COLLEGE (AUTONOMOUS)  
KOLLAM



**PHYLOGENETIC AND PROTEIN ANALYSIS (SDS-PAGE) OF  
FRESHWATER FISH (*ETROPLUS SP.*) USING MOLECULAR  
MARKERS**

**DISSERTATION**

*Submitted to the University of Kerala*

*In partial fulfillment of the*

*Requirements for the award of the Degree of*

**MASTER OF SCIENCE**

**IN**

**ZOOLOGY**

**SUMITHA RANI THOMAS**

**REG. NO – P1915013**

**COURSE CODE – 19PZ045**



**PG AND RESEARCH DEPARTMENT OF ZOOLOGY,  
FATIMA MATA NATIONAL COLLEGE (AUTONOMOUS), KOLLAM  
JULY 2021**

PG AND RESEARCH DEPARTMENT OF ZOOLOGY  
FATIMA MATA NATIONAL COLLEGE (AUTONOMOUS), KOLLAM



**CERTIFICATE**

This is to certify that dissertation entitled “**Phylogenetic and Protein Analysis (SDS-PAGE) of Freshwater Fish (*Etroplus Sp.*) using Molecular Markers**” is an authentic record of the work carried out by Ms. Sumitha Rani Thomas (Reg. No. P1915013) under my supervision and guidance in Fatima Mata National College, (Autonomous), Kollam, in partial fulfillment of the requirements for the Master of Science in Zoology and no part of this work thereof has been submitted for any other degree in any University.

*Vijayasree*  
30/7/2021  
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Supervising Teacher

FMN College, Kollam

*Nisha Thomas*  
3/8/21

Mrs. Nisha Thomas P.

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FMN College, Kollam

HEAD, DEPARTMENT OF ZOOLOGY  
Fatima Mata National College (Autonomous),  
Kollam.



**A COMPARATIVE STUDY ON THE PLANKTON DIVERSITY  
AND PHYSICO- CHEMICAL PROPERTIES OF PARAVUR  
LAKE AND EDAVA NADAYARA LAKE**

**DISSERTATION**

*Submitted to the University of Kerala In partial fulfillment of the  
Requirements for the award of the Degree of*

**MASTER  
OF SCIENCE  
IN ZOOLOGY**

**By**

**AKSHAY.M.A**

**CANDIDATE CODE – P1915014**

**COURSE CODE – 19PZO45**



**POST GRADUATE DEPARTMENT OF ZOOLOGY  
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**JULY 2021**



**PG AND RESEARCH DEPARTMENT OF ZOOLOGY**  
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**Dr. Dafina Wilfred**  
**M.Sc., M.Phil., Ph.D**

**Phone (M):9895079709**  
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---

**CERTIFICATE**

This is to certify that dissertation entitled “ **A comparative study on the plankton diversity and physico-chemical properties of Paravur Lake and Edava Nadayara Lake**” is an authentic record of the work carried out by Akshay M.A (*Candidate Code: P1915014*) under my supervision and guidance in Fatima Mata National College, (Autonomous), Kollam, in partial fulfillment of the requirements for the Master of Science in Zoology and no part of this work thereof has been submitted for any other degree in any University.

**Mrs. Nisha Thomas P.**  
HOD & Assistant Professor  
FMN College, Kollam

**Dr. Dafina Wilfred**  
Assistant Professor  
Supervising Teacher  
FMN College, Kollam



**A PRELIMINARY STUDY REPORT ON THE BIODIVERSITY ASSOCIATED  
WITH THE MANGROVES IN KUMBALAM KAYAL, A TRIBUTARY OF  
ASHTAMUDI ESTUARY**

***DISSERTATION***

***Submitted to the University of Kerala***

***In partial fulfillment of the***

***Requirements for the award of the Degree of***

**MASTER OF SCIENCE IN ZOOLOGY**

***OYGAN.J***

**CANDIDATE CODE – P1915015**

**COURSE CODE – 19PZ045**



**PG AND RESEARCH DEPARTMENT OF ZOOLOGY,  
FATIMA MATA NATIONAL COLLEGE (AUTONOMOUS), KOLLAM**

**JULY 2021**

**PG AND RESEARCH DEPARTMENT OF ZOOLOGY**  
**FATIMA MATA NATIONAL COLLEGE (AUTONOMOUS), KOLLAM**



**CERTIFICATE**

This is to certify that the dissertation entitled “**A PRELIMINARY STUDY REPORT ON THE FAUNAL DIVERSITY ASSOCIATED WITH THE MANGROVES IN KUMBALAM KAYAL, A TRIBUTARY OF ASHTAMUDI ESTUARY**” is an authentic record of the work carried out by Mr. Oygan J (Candidate Code – P1915015) under my supervision and guidance in Fatima Mata National College, (Autonomous), Kollam, in partial fulfillment of the requirements for the Master of Science in Zoology, and no part of this work thereof has been submitted for any other degree in any University.

**Prof. Nisha Thomas P.**

Supervising Teacher

FMN College, Kollam

**Prof. Nisha Thomas P.**

Head of the Department

FMN College, Kollam



HEAD DEPARTMENT OF ZOOLOGY  
Fatima Mata National College (Autonomous)  
Kollam



**PROJECT WORK**  
**ON**  
**SYNTHESIS AND APPLICATION OF ZINC LOADED BIOCHAR FOR**  
**ENVIRONMENTAL REMEDIATION**

**DISSERTATION SUBMITTED TO**  
**FATIMA MATA NATIONAL COLLEGE (AUTONOMOUS), KOLLAM**  
In partial fulfilment of the requirements for the award of the Degree of  
Master of Science in Chemistry

**By**

**MUHSIN SHA DULQUER M.**

**Candidate code: P1913013**

**Course code: 19PCH43(a)**



**DEPARTMENT OF CHEMISTRY**  
**FATIMA MATA NATIONAL COLLEGE (AUTONOMOUS)**  
**KOLLAM**

## CERTIFICATE

This is to certify that MR. MUHSIN SHA DULQUER M. , M.Sc. CHEMISTRY (Candidate No. P1913013 ), a student of F.M.N.C. (Autonomous), Kollam had effectively carried out the project entitled '**SYNTHESIS AND APPLICATION OF ZINC LOADED BIOCHAR FOR ENVIRONMENTAL REMEDIATION**' in the Department of Chemistry, F.M.N.C. (Autonomous), Kollam under the guidance of Dr. Manohar D. Mullassery and is permitted to submit this project work to Kerala University



**Dr. MANOHAR D. MULLASSERY**

**Supervising Teacher**

**Associate Professor**

**Department of Chemistry**

**F.M.N.C. Kollam**



**Dr. APSARA AP.**

**Head of the Department**

**Department of Chemistry**

**F.M.N.C. Kollam**

**EFFECT OF  $\text{CaCO}_3$  ON THE PHYSICAL AND  
MECHANICAL PROPERTIES OF NATURAL RUBBER  
COMPOUNDS**

**DISSERTATION**

**Submitted to FATIMA MATA NATIONAL COLLEGE(AUTONOMOUS) Kollam in  
partial fulfilment of the requirements for the award of the degree of Master of Science  
in Chemistry**

**By**

**AJIS MARIA**

**Candidate code: P1913001**

**Course code: 19CH43 (a)**



**DEPARTMENT OF CHEMISTRY  
FATIMA MATA NATIONAL COLLEGE (AUTONOMOUS)  
KOLLAM**

## CERTIFICATE

This is to certify that, Ms. AJIS MARIA, M.Sc. CHEMISTRY (IV Semester) student of FMNC (Autonomous), Kollam had effectively carried out the project work entitled "*EFFECT OF  $\text{CaCO}_3$  ON THE PHYSICAL AND MECHANICAL PROPERTIES OF NATURAL RUBBER COMPOUNDS*" in the Department of Chemistry, FMNC (Autonomous), Kollam under the guidance of Dr Mary Nancy T.E.

AJIS MARIA



**Dr. Mary Nancy T.E**

Supervising Teacher



**Dr. Apsara A.P**

Head of the department

**GREEN CHEMISTRY - A POTENTIAL TOOL FOR  
CHEMICAL SYNTHESIS**

DISSERTATION

Submitted to

FATIMA MATA NATIONAL COLLEGE (AUTONOMOUS)

KOLLAM

In partial fulfillment of the requirements for the award

Of the degree of Master of Science in Chemistry

BY

SURABHI S

Candidate Code: P1913010

Course Code: 19PCH43 (a)



DEPARTMENT OF CHEMISTRY

FATIMA MATA NATIONAL COLLEGE (AUTONOMOUS) KOLLAM

## CERTIFICATE

This is to certify that Ms. SURABHI S, MSc CHEMISTRY (Semester IV) student of Fatima Mata National College (Autonomous) Kollam, had effectively carried out the project work entitled “ **GREEN CHEMISTRY – A POTENTIAL TOOL FOR CHEMICAL SYNTHESIS** ” in the Department of Chemistry , Fatima Mata National College (Autonomous) Kollam under the guidance of Ms. Mini V.



Ms. Mini .V

Supervising Teacher



Dr. Apsara A P

Head of the Department

# **STUDY ON THE EFFECT OF VARIOUS AMOUNTS OF ACTIVATOR ZnO IN NATURAL RUBBER VULCANIZATES**

DISSERTATION

Submitted to FATIMA MATA NATIONAL COLLEGE(AUTONOMOUS)  
Kollam in partial fulfilment of the requirements for the award of the degree of  
Master of science in chemistry

By

**SOJIYA C**

**Candidate code : P1913009**

**Course code : 19CH43(a)**



DEPARTMENT OF CHEMISTRY  
FATIMA MATA NATIONAL COLLEGE (AUTONOMOUS)  
KOLLAM

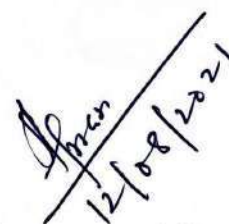
# CERTIFICATE

This is to certify that SOJIYA C M.Sc. CHEMISTRY student of FMNC(Autonomous), Kollam had effectively carried out the project work entitled “**STUDY ON THE EFFECT OF VARIOUS AMOUNTS OF ACTIVATOR ZnO IN NATURAL RUBBER VULCANIZATES**” in the department of chemistry, FMNC(Autonomous), Kollam under the guidance of Dr Mary Nancy T.E.

SOJIYA C



**Dr. Mary Nancy T.E**  
Supervising Teacher



**Dr. Apsara A.P**  
Head of the Department



**VIBRATIONAL ANALYSIS AND DFT COMPUTATIONS OF  
(E)-2-(((4-HYDROXY-2-ISOPROPYL-5-METHYL PHENYL)  
IMINO) METHYL)-3-ISOPROPYL-6-METHYL PHENOL**

*Dissertation submitted to, Fatima Mata National College(Autonomous),*

*Kollam*

*in partial fulfilment of the requirements for the award of the degree of*

*Master of Science in Chemistry.*

By

**DONA VARGHESE**

**Candidate code: P1913004**

**Course code: 19PCH43(a)**



**DEPARTMENT OF CHEMISTRY**

**FATIMA MATA NATIONAL COLLEGE (AUTONOMOUS)**

**KOLLAM**

## CERTIFICATE

This is to certify that the project work entitled 'VIBRATIONAL ANALYSIS AND DFT COMPUTATIONS OF(E)-2-(((4-HYDROXY-2-ISOPROPYL-5-METHYL PHENYL) IMINO) METHYL)-3-ISOPROPYL-6-METHYL PHENOL' submitted for the award of the degree of Master of Science in Chemistry, is a bonafide work of Ms. Dona Varghese, student of Fatima Mata National College(Autonomous),Kollam who had effectively carried out the research under o the guidance of Dr. Namitha L K, Assistant Professor, Department of Chemistry, and this dissertation has not been previously submitted elsewhere.



Dr. Namitha L K

Supervising Teacher



Dr. Apsara A P

Head of the Department

# **DETERMINATION OF WATER QUALITY AND ELEMENTAL ANALYSIS BY VARIOUS INSTRUMENTS**

DISSERTATION Submitted to,  
FATIMA MATA NATIONAL COLLEGE  
(AUTONOMOUS) KOLLAM

In partial fulfilment of the requirements for the award  
Of the degree of Master of Science in Chemistry

BY

RESHMA RAJAN

P1913007

Course code: 19PCH43(a)

Under the supervision of

**Mr. Upendra Badimela**

Scientist,

Biogeochemistry Group

National Centre for Earth Science Studies

Thiruvananthapuram

**Dr. Apsara A.P**

Assistant Professor

Department of Chemistry

Fatima Mata National College

(Autonomous) Kollam.



DEPARTMENT OF CHEMISTRY  
FATIMA MATA NATIONAL COLLEGE  
(AUTONOMOUS) KOLLAM

# CERTIFICATE

This is to certify that Ms. RESHMA RAJAN, MSc CHEMISTRY (Semester IV) student of Fatima Mata National College (autonomous) Kollam, had effectively carried out the project work entitled "*Determination of water quality and elemental analysis by various Instruments*" in the department of chemistry, Fatima Mata National College (Autonomous) Kollam, under the guidance of Dr. APSARA.A.P



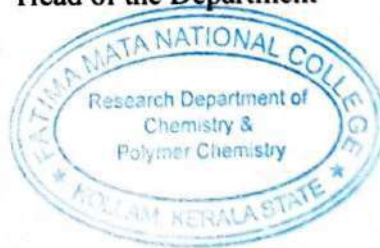
Dr. Apsara A P

Supervising Teacher



Dr Apsara A P

Head of the Department



**SPECTROSCOPIC INVESTIGATIONS AND DFT  
COMPUTATIONS OF (E)-2-(((4-HYDROXY-2-  
ISOPROPYL-5-METHYLPHENYL) IMINO)  
METHYL)-6-ISOPROPYL-3-METHYLPHENOL**

*Dissertation submitted to Fatima Mata National College (Autonomous), Kollam*

*In the partial fulfilment of the award of the degree of*

*Master of Science in Chemistry*

*By*

**BEENU C**

**Candidate code: P1913003**

**Course code: 19PCH43 (a)**



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## CERTIFICATE

This is to certify that the project work entitled 'SPECTROSCOPIC INVESTIGATIONS AND DFT COMPUTATIONS OF (E)-2-(((4-HYDROXY-2-ISOPROPYL-5-METHYLPHENYL)IMINO)METHYL)-6-ISOPROPYL-3 METHYLPHENOL' submitted for the award of the degree of Master of Science in Chemistry, is a bonafide work of Ms. Beenu C, student of Fatima Mata National College (Autonomous), Kollam, who had effectively carried out the research under the guidance of Dr. Namitha L K, Assistant Professor, Department of Chemistry, and this dissertation has not been previously submitted elsewhere.



**Dr. Namitha L. K**  
Supervising teacher



**Dr. Apsara A. P**  
Head of the Department

**STRUCTURAL FEATURES AND VIBRATIONAL ANALYSIS OF  
3-(2,8,9-trioxa-5-aza-1-sila-bicyclo[333]undecan-1-yl)propane-1-thiol**

*Dissertation submitted to Fatima Mata National College (Autonomous), Kollam*

*In the partial fulfilment of the award of the degree of*

*Master of Science in Chemistry*

*By*

**AMINA L**

**P1913002**

**Course Code: 19PCH43(a)**



**DEPARTMENT OF CHEMISTRY  
FATIMA MATA NATIONAL COLLEGE (AUTONOMOUS)  
KOLLAM**

## CERTIFICATE

This is to certify that AMINA L, M.Sc. CHEMISTRY (Semester IV) student of Fatima Mata National College (Autonomous), Kollam had effectively carried out the project work entitled "STRUCTURAL FEATURES AND VIBRATIONAL ANALYSIS OF 3-(2,8,9-trioxa-5-aza-1-sila-bicyclo[3.3.3]undecan-1-yl)propane-1-thiol" in the department of Chemistry, Fatima Mata National College (Autonomous), Kollam under the guidance of Ms. SHERIN MOL



**Ms. Sherin Mol**

**Supervising Teacher**



**Dr. Apsara A P**

**Head Of the Department**



# DISSERTATION

*Submitted to Fatima Mata National College (Autonomous), in partial  
fulfilment of the requirements for the award of degree in*

*Master of Science in Mathematics*

*by*

**SHERIN ALEX**

**Candidate Code:P1911011**

**Subject Code:19PMM45**

**Under the guidance of**

**Ms. Preethu.M**



**DEPARTMENT OF MATHEMATICS**

**FATIMA MATA NATIONAL COLLEGE (AUTONOMOUS)**

**KOLLAM-691001**

**2019-2021**

**DEPARTMENT OF MATHEMATICS**  
**FATIMA MATA NATIONAL COLLEGE (AUTONOMOUS)**  
**KOLLAM-691001**

**CERTIFICATE**

**This is to certify that the dissertation work entitled "DIFFERENTIAL FORMS AND APPLICATIONS" which is being submitted by Sherin Alex (Fourth semester M.Sc. Mathematics, 2019-2021, F.M.N.College, Kollam. Candidate Code : P1911011) in partial fulfilment for the award of Master of Science in Mathematics to Fatima Mata National College (Autonomous) has been carried under my supervision and guidance.**



**Ms. Ann Varghese**  
**Head of the Department of Mathematics**  
**Fatima Mata National College**

**Ms. Preethu.M**  
**Guest Lecturer-in-charge**

**Place: Kollam**  
**Date: 22/07/2021**

**External Examiners**

# **DISSERTATION**

*Submitted to Fatima Mata National College (Autonomous), in partial  
Fulfillment of requirements for the award of degree of*

*Master of Science in Mathematics*

**By**

**VIDYA. V. G**

**Candidate Code: P1911012**

**Subject Code: 19PMM45**

*Under the supervision of*

**Dr. ANIL KUMAR**



**DEPARTMENT OF MATHEMATICS  
FATIMA MATA NATIONAL COLLEGE (AUTONOMOUS)  
KOLLAM – 691001**

2019-2021

DEPARTMENT OF MATHEMATICS

FATIMA MATA NATIONAL COLLEGE (AUTONOMOUS)

KOLLAM – 691001

**CERTIFICATE**

This is to certify that the dissertation work entitled " **SPECTRAL GRAPH THEORY** " which is being submitted by **Vidya V G** (Fourth semester M.Sc.Mathematics , 2019-2021 , F.M.N.College , Kollam , Candidate Code : P1911012 ) in partial fulfillment for the Master of Science in Mathematics to Fatima Mata National College ( Autonomous ) has been carried out under my supervision and guidance.



**Mrs. Ann Varghese**

*Head of the department of Mathematics*



**Dr. Anil Kumar**

*Lecturer-in-charge*

Place: Kollam

Date: 22/7/2021

**External Examiner**

**DISSERTATION**

*Submitted to Fatima Mata National College (Autonomous), in partial  
fulfilment of requirements for the award of degree of*

*Master of Science in Mathematics*

*By*

**VIVITHA VIJAYAN**

**Candidate Code: P1911013**

**Subject Code: 19PMM45**

*Under the supervision of*

**Dr. ROSINI B.**



**DEPARTMENT OF MATHEMATICS**

**FATIMA MATA NATIONAL COLLEGE (AUTONOMOUS)**

**KOLLAM-691001**

**2019-2021**

**DEPARTMENT OF MATHEMATICS**

**FATIMA MATA NATIONAL COLLEGE (AUTONOMOUS)**

**KOLLAM-691001**

**CERTIFICATE**

This is to certify that the dissertation work entitled “**PETRI NETS**” which is being submitted by **Vivitha Vijayan** (Fourth semester M.Sc. Mathematics, 2019-2021, F.M.N. College, Kollam, Candidate Code: P1911013) in partial fulfilment for the Master of Science in Mathematics to Fatima Mata National College(Autonomous) has been carried out under my supervision and guidance.

  
**Mrs Ann Varghese**

Head of the Department of Mathematics

  
**Dr. Rosini B**

Lecture-in-charge

Place: Kollam

Date: 22/07/2021

External Examiner

# **DISSERTATION**

Submitted to Fatima Mata National College (Autonomous),  
in partial fulfillment of requirements  
for the award of degree of  
**Master of Science in Mathematics**

by

ARUN GEO JOHN

**Candidate Code: P1911014**

**Subject Code: 19PMM45**

Under the supervision of

**Ms. Ann Varghese**



**DEPARTMENT OF MATHEMATICS**  
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**KOLLAM - 691001**  
**2019 - 2021**

## CERTIFICATE

This is to certify that the dissertation work entitled " **MARTRIX LIE GROUPS**" which is being submitted by Arun Geo John ( Fourth semester M.Sc. Mathematics, 2019-2021 , F.M.N college, Kollam. Candidate Code: P1911014) in partial fulfillment for the Master of Science in Mathematics to Fatima Mata National College (Autonomous) has been carried out under my supervision and guidance.



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# **DISSERTATION**

Submitted to Fatima Mata National College (Autonomous),  
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**NAVEEN M S**

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**2019 - 2021**

## CERTIFICATE

This is to certify that the dissertation work entitled "A STUDY ON FIXED POINT THEORY IN ULTRAMETRIC SPACE" which is being submitted by

Naveen M S ( Fourth semester M.Sc. Mathematics, 2019-2021 , F.M.N college, Kollam. Candidate Code: P1911015) in partial fulfillment for the Master of Science in Mathematics to Fatima Mata National College (Autonomous) has been carried out under my supervision and guidance.



**Ms. Ann Varghese**

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**External Examiner**

# DISSERTATION

*Submitted to Fatima Mata National College (Autonomous), in partial  
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*Master of science in Mathematics*

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**CERTIFICATE**

This is to certify that the dissertation work entitled "VERTEX MAGIC TOTAL LABELING" which is being submitted by Resvi S (Fourth Semester M.Sc. Mathematics, 2019-2021, F.M.N. College, Kollam. Candidate code : 1611009) in partial fulfillment for the Master of Science in Mathematics to Fatima Mata National College (Autonomous) has been carried out under my supervision and guidance.



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*Lecture-in-charge*

Place : Kollam

Date : 22-07-2021

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# ***DISSERTATION***

*Submitted to Fatima Mata National College (Autonomous), in partial  
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By

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**CERTIFICATE**

This is to certify that the dissertation work entitled "**A STUDY ON BILINEAR FORMS**" which is being submitted by **Anjitha P** (Fourth semester M.Sc. Mathematics, 2019-2021, F.M.N. College, Kollam. Candidate Code: P1911001) in partial fulfillment for the Master of Science in Mathematics to Fatima Mata National College (Autonomous) has been carried out under my supervision and guidance.

  
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**DISSERTATION**

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
**DEPARTMENT OF MATHEMATICS**  
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This is to certify that the dissertation work entitled "**REPRESENTATION OF THE SYMMETRIC GROUP**" which is being submitted by **Anju Varghese** (Fourth semester M.Sc. Mathematics ,2019-2021, F.M.N.College, Kollam. Candidate Code:P1911002) in partial fulfillment for the Master of Science in Mathematics to Fatima Mata National College(Autonomous) has been carried out under my supervision and guidance.

  
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**DISSERTATION**

*Submitted to Fatima Mata National College (Autonomous), in partial  
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**2019-2021**

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**CERTIFICATE**

This is to certify that the dissertation work entitled "**DOMINATION IN GRAPHS**" which is being submitted by **ARATHY.S.MANOHAR** ( Fourth semester M.Sc. Mathematics, 2019-2021, F.M.N.College Kollam, Candidate Code: P1911003 ) in partial fulfillment for the Master of Science in Mathematics to Fatima Mata National College (Autonomous) has been carried out under my supervision and guidance.



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# ***DISSERTATION***

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***Master of Science in Mathematics***

By

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**Subject Code: 19PMM45**

*Under the supervision of*

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**KOLLAM-691001**

**CERTIFICATE**

This is to certify that the dissertation work entitled "**DIFFERENTIAL GEOMETRY**" which is being submitted by **Binita Bellarman** (Fourth semester M.Sc. Mathematics, 2019-2021, F.M.N. College, Kollam.

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*Ann Varghese*

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# **DISSERTATION**

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**2019-2021**

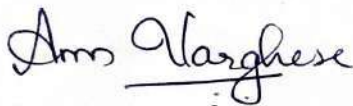
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**FATIMA MATA NATIONAL COLLEGE (AUTONOMOUS)**

**KOLLAM-691001**

**CERTIFICATE**

This is to certify that the dissertation work entitled "**A STUDY ON DIGITAL GEOMETRY**" which is being submitted by **Chrinsu Justin** (Fourth semester M.Sc. Mathematics, 2019-2021, F.M.N.College, Kollam, Candidate Code: P1911005) in partial fulfillment for the Master of Science in Mathematics to Fatima Mata National College (Autonomous) has been carried out under my supervision and guidance.



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Place: Kollam

Date: 22-07-2021

External Examiner

# **DISSERTATION**

*Submitted to Fatima Mata National College (Autonomous), in partial  
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**2019-2021**

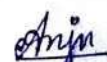
**DEPARTMENT OF MATHEMATICS**  
**FATIMA MATA NATIONAL COLLEGE (AUTONOMOUS)**  
**KOLLAM – 691001**

**CERTIFICATE**

This is to certify that the dissertation work entitled "AN INTRODUCTION TO CODING THEORY" which is being submitted by **Deepika C** (Fourth Semester M.Sc. Mathematics, 2019 – 2021, F.M.N. College, Kollam. Candidate Code: P1911006) in partial fulfilment for the Master of Science in Mathematics to Fatima Mata National College (Autonomous) has been carried out under my supervision and guidance.

  
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# **DISSERTATION**

*Submitted to Fatima Mata National College(Autonomous),in partial  
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**Master of Science in Mathematics**

BY

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## CERTIFICATE

This is to certify that the dissertation work entitled "**A STUDY ON KNOT THEORY**" which is being submitted by Jackline Jose (Fourth semester M.Sc. Mathematics, 2019-2021 , F.M.N college, Kollam. Candidate Code: P1911007) in partial fulfillment for the Master of Science in Mathematics to Fatima Mata National College (Autonomous) has been carried out under my supervision and guidance.



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# **DISSERTATION**

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**2019-2021**

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**FATIMA MATA NATIONAL COLLEGE (AUTONOMOUS)**

**KOLLAM-691001**

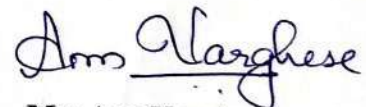
**CERTIFICATE**

This is to certify that the dissertation work entitled "MATHEMATICAL ANALYSIS OF COVID-19" which is being submitted by Nancy Cletus (Fourth semester M.Sc. Mathematics, 2019-2021, F.M.N.College, Kollam, Candidate Code: P1911008) in partial fulfillment for the Master of Science in Mathematics to Fatima Mata National College (Autonomous) has been carried out under my supervision and guidance.



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Lecture-in-charge

Place: Kollam

Date: 22/07/2021.

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# DISSERTATION

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*Master of Science in Mathematics*

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**Subject Code: 19PMM45**

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**2019-2021**

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**FATIMA MATA NATIONAL COLLEGE (AUTONOMOUS)**  
**KOLLAM-691001**  
**CERTIFICATE**

This is to certify that the dissertation work entitled "**THE MATH BEHIND THE MUSIC**" which is being submitted by Petresia C (Fourth semester M.Sc. Mathematics , 2019-2021,F.M.N.College,Kollam.Candidate Code:P1911009) in partial fulfillment for the Master of Science in Mathematics, to Fatima Mata National College (Autonomous) has been carried out under my supervision and guidance.

  
**Ms. Ann Varghese**

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Lecturer-in-charge

Place: Kollam

Date: 22/ 7 /2021

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# **DISSERTATION**

*Submitted to Fatima Mata National College (Autonomous), in partial fulfillment  
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**Master of Science in Mathematics**

By

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**Subject Code: 19PMM45**

*Under the supervision of*

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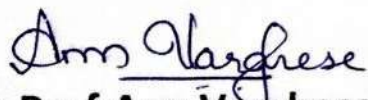
**FATIMA MATA NATIONAL COLLEGE (AUTONOMOUS)**

**KOLLAM – 691001**

**2019-2021**

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This is to certify that the dissertation work entitled “**MATROIDS**” which is being submitted by **REENU N** (Fourth semester M.Sc. Mathematics, 2019-2021, F.M.N.College, Kollam. Candidate Code:P1911010) in partial fulfillment for the Master of Science in Mathematics to Fatima Mata National College(Autonomous) has been carried out under my supervision and guidance.



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Place:Kollam

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**DEPARTMENT OF ECONOMICS  
LIST OF PROJECT GROUPS  
III DC (B)**

**DEPARTMENT OF ECONOMICS**  
**LIST OF PROJECT GROUPS**  
**III DC (B)**

	<b>Group -1</b>	<b>Supervising Teacher</b>	<b>TOPIC</b>
1	Ann Mary SHEEBA Y	Ms Minu Elza R	A Brief Study of a private organization named Zafin Centre of Excellence Pvt.Ltd,operating in Technopark
2	JOHN GEORGE		
3	LJO G LUKE		
4	VINOD V		
5	AMINA A		
	<b>Group -2</b>	Ms Ayona Nelson	A Study on the impact of fuel price hike among computers and drivers in Kollam City
1	ALEN DAVIS T A		
2	ARYA ASOKAN		
3	ASNA ASIF		
4	ATHULYA JOSE		
5	JJI J		
	<b>Group -3</b>	Ms Stella S	A STUDY ON CONSUMER TOWARDS ITC PRODUCTS IN KOLLAM CITY
1	HARIKRISHNA		
2	GEETHU B		
3	JAANI ELSA MOHAN		
4	JENNIFER THOMAS		
5	BINCY BENZIGER		
	<b>Group -4</b>	Ms Minu Elza R	ICT enabled learning among students
1	LOIS FREDY		
2	JISHA JACKSON		
3	JISHA J		
4	NOUFIYA A		
5	YESUDAS V		
	<b>Group -5</b>	Dr Mary Antony	Role of Kumdumshree units in women Empowerment:A study with reference to Thodiyoor Grama panchayath in Kollam
1	REJANI RAJAN		
2	SANGEETHA S		
3	SAYED ALI S		
4	SHABINA SHAJAHAN		
5	SHARON S		
	<b>Group -6</b>	Dr Titus A R	Study on the tourism and its potential with special reference to Jatayu Earth Center, Chadayamangalam
1	RAVI SANKAR R NAIR		
2	SOUMYA B		
3	SREETHU S PRASAD		
4	SUNITHA S L		
5	VANDANA S		
6	SHIJI S		

**DEPARTMENT OF ECONOMICS**  
**LIST OF PROJECT GROUPS**  
**III DC (B)**

	<b>Group -7</b>		
1	AKHILA SELVAM		
2	ALFINA A		
3	AJITH ANTONY		
4	AKHILA N		
5	VIDHU M WILLIAM		
		Dr Mary Antony	Financial Status of Coir workers in Kerala-A study with special reference to Anchalumoodu area of Kollam Corporation
	<b>Group -8</b>		
1	ARATHY R		
2	ANCY JOSEPH		
3	ASHMI S		
4	ANJU ANIL		
5	ABHIJITH U		
6	ASHA WILSON	Mr Manu Vijayan	Assessment of socio-economic status of inland fishermen community-A study with special reference to Kollam
	<b>Group -9</b>		
1	FATHIMA S S		
2	ATHUL WILSON		
3	SIVAPRIYA J		
4	GODWIN RAJ		
5	JASEELA N		
	<b>Group -10</b>	Ms Shalini Mathews	A study on convenience banking with special reference to State Bank of India
1	NADHU U		
2	ROSKEY J		
3	KRISHNA PRIYA S		
4	NITHIN P M		
5	PRIYA GILBERT		
6	RESHMA KRISHNAN	Ms Neethu M Mathews	A study on the socio-economic status of unskilled workers with special reference to Kollam Railway Station
	<b>Group -11</b>		
1	ANJALI A		
2	SHERIN SHAJI		
3	SIJI SEBASTIAN		
4	MAHESH M		
5	SOUMYA R		
6	STENI S	Ms Stella S	A Study on the impact of integrated child development scheme and the growth of Anganwadis centres with special reference to Munroe Islands
	<b>Group -12</b>		
1	VARUN V		
2	SWATHY V S		
3	TEENA THOMAS	Dr Titus AR	Socio Economic conditions of dairy farmers –A case study of Chirakkara

**DEPARTMENT OF ECONOMICS**  
**LIST OF PROJECT GROUPS**  
**III DC (B)**

4	V ANJALI		
5	SUMITH LAL M		
6	VINITHA S		

# A STUDY ON EXPLORATION OF MATHEMATICAL APPLICATIONS IN CRYPTOGRAPHY

## DESSERTATION

Submitted to

FATIMA MATA NATIONAL COLLEGE (AUTONOMOUS)

*In partial fulfillment of the requirements of the award of degree of First  
Degree Programme in Mathematics*

By

CANDIDATE NAME	CANDIDATE CODE
JENI FERNANDEZ	U1811001
NIMA VARGHESE	U1811002
PAVITHRA THIYOPHIN	U1811003
ANTONY S.	U1811004
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Course Code : 18UMM646

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KOLLAM 2018-2021


**DEPARTMENT OF MATHEMATICS**  
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**KOLLAM 2018-2021**

**CERTIFICATE**

This is to certify that dissertation work entitled 'A STUDY ON EXPLORATION OF MATHEMATICAL APPLICATIONS IN CRYPTOGRAPHY' which is being submitted by sixth semester BSc Mathematics 2018 – 2021.

JENI FERNANDEZ	U1811001
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Assistant Professor  
Head of the Department  
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Dr. Anil Kumar S.


Assistant Professor  
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Place : Kollam

Date :

External Examiners

  
SHAMNA M

  
Prabha S

# **A STUDY ON SPECTRAL GRAPH THEORY**

## **DISSERTATION**

**SUBMITTED TO FATIMA MATA NATIONAL COLLEGE  
(AUTONOMOUS)**

**In Partial fulfillment of the requirements of the award of degree of First  
Degree Programme in Mathematics**

**By**

**Candidate**

**DENNSON S**

**JOHNSON N**

**STEVE JUDE**

**THEJAS J PRINCE**

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**Candidate code**

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**Course code: 18UMM646**

**UNDER THE SUPERVISION OF**

**Ms. ANN VARGHESE**



**DEPARTMENT OF MATHEMATICS**

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**KOLLAM-691001**

**2018-2021**

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**FATIMA MATA NATIONAL COLLEGE (AUTONOMOUS)**  
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This is to certify that dissertation work entitled 'A STUDY ON SPECTRAL GRAPH THEORY' which is being submitted by sixth semester B.Sc. Mathematics 2018-2021

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**Ms. Ann Varghese**  
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**Ms. Ann Varghese**  
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Place: Kollam  
Date:

External Examiners

  
SHAMNA M

  
Prabha.S



# A STUDY ON TENSOR ANALYSIS

## DISSERTATION

Submitted to Fatima Mata National College (Autonomous), Kollam

In partial fulfillment of the requirements for the award of degree of First Degree Programme in Mathematics

By

Candidate	Candidate Code
Aleena Jose	U1811012 ✓
Anakha V G	U1811013 ✓
Aparna C M	U1811014 ✓
Aswathi R	U1811015 ✓
Danie P Anna	U1811016 ✓

Course code: 18UMM646

Under the Supervision of

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2018-21

# DEPARTMENT OF MATHEMATICS

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This is to certify that the dissertation work entitled '**A STUDY ON TENSOR ANALYSIS**' which is being submitted by sixth semester Bsc. Mathematics 2018-21

Aleena Jose	U1811012
Anakha V G	U1811013
Aparna C M	U1811014
Aswathi R	U1811015
Danie P Anna	U1811016

In Partial fulfillment for the award of the Degree of First Degree Programme in Mathematical has been carried out under my supervision and guidance.

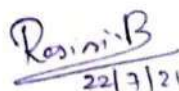


Mrs. Ann Varghese

Assistant Professor, HOD

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22/7/21

Dr. Rosini B

Assistant Professor

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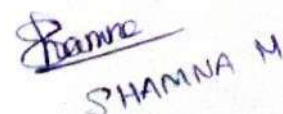
FMN College, Kollam

Place: Kollam

Date: 22-07-2021

  
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SHAMNA M

**A STUDY ON HAUSDORFF SPACES**  
**DISSERTATION**

**Submitted to Fatima Mata National College**  
**(Autonomous)**

**In Partial fulfillment of the requirements of the award of degree**  
**of First Degree Programme in Mathematics**

**By**

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**A STUDY ON PRIMITIVE ROOTS  
DISSERTATION**

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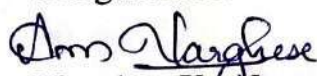
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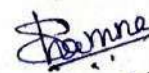
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# **A STUDY ON GROUP THEORY AND ITS APPLICATION IN CHEMISTRY**

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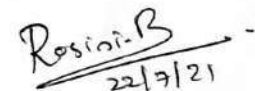
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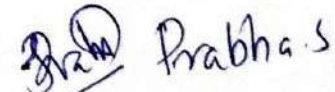
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**A STUDY ON GAME THEORY**

**DISSERTATION**

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**A STUDY ON FOURIER TRANSFORMS  
DISSERTATION**

**Submitted to Fatima Mata National College  
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# **A STUDY ON LAPLACIAN OF A GRAPH**

## **DISSERTATION**

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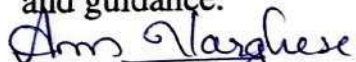
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**LEBESGUE MEASURE AND INTEGRATION  
DISSERTATION**

Submitted to the Fatima Mata National College (Autonomous), in partial fulfillment of the requirements for the award of Degree in Bachelor of Science in Mathematics.

By

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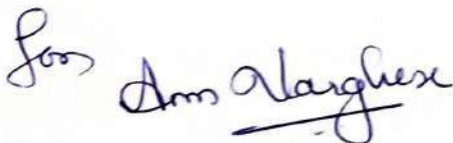
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# **A STUDY ON OPERATIONS RESEARCH**

## **DISSERTATION**

**Submitted to Fatima Mata National College**

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In partial fulfillment of the requirements for the award of degree of  
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