KALASALINGAM
ACADEMY OF RESEARCH AND EDUCATION
(DEEMED TO BE UNIVERSITY)
Under sec. 3 of UGC Act 1956. Accredited by NAAC with "A" Grade

Anand Nagar, Krishnankoil - 626126, Srivilliputtur (via), Virudhunagar District, Tamilnadu.

APPLICATION FOR ADMISSION TO Ph.D. PROGRAMMES

Date of Application:19-12-2020

Department	ELECTRONICS AND COMMUNICATION ENGINEERING	Application No.	202020127
Area of Research	ELECTRONICS AND COMMUNICATION	Research Mode	PART TIME

Name :POOJA S MOHAN

Date of Birth / Age :12-09-1986 / 34 Years

Gender :FEMALE

Category :OC

e-Mail ID :pooja.sandhya12@gmail.com

Mobile :9048145910

Father's/Husband's Name	ANISH PILLAI	**Father's/Husband's Occupation**	ADMINISTRATION
Family Income	450000	**Residental Type**	RURAL
Birth Place	KAYAMKULAM	**Mother Tongue**	MALAYALAM
Religion	HINDU	**Martial Status**	MARRIED
Aadhaar No.	909047881382	**PAN No.**	AWSPP9456D
Physically Challenged	NO	**Type of Disability**	-

Address for Communication:	**Permenant Address:**
MONI BHAVAN	MONI BHAVAN
CHIRAKKADAVOM	CHIRAKKADAVOM
KAYAMKULAM	KAYAMKULAM
ALAPPUZHA DISTRICT	ALAPPUZHA DISTRICT
KERALA	KERALA
INDIA	INDIA
Pin-690502	Pin-690502

Qualification

Degree	Discipline	College/university	Year Passed	AVG/CGPA	Class	Mode
M.TECH	OPTOELECTRONICS & COMMUNICATION SYSTEMS	CUSAT	2012	8.96	DISTINCTION	REGULAR
B.E	ELECTRONICS	UNIVERSITY OF MUMBAI	2008	74.5%	DISTINCTION	REGULAR

Experience

Organization	Designation	Experience From	Experience TO	Work Nature
SREE BUDDHA COLLEGE OF ENGINEERING	ASSISTANT PROFESSOR	2012-06-04	2020-12-19	TEACHING
DUBAS ENGINEERING PVT. LTD.	TRAINEE R&D ENGINEER	2008-12-08	2010-09-16	EMBEDDED SOFTWARE DEVELOPMENT

Payment Details

Transaction ID	Reference	Date of transaction	Amount	Status
202020127_201219154359	VUR29574462586	19-12-2020	600	SUCCESS

Research Statement

I am an Electronics and Communication Engineer post graduated in the field of Optoelectronics and Communication Systems. My M.Tech Thesis was based on Dense Wavelength Division Multiplexing technology. Dense Wavelength Division Multiplexing (DWDM) technology offer unprecedented capability to expand transmission capacity in long-distance telecommunications and increase the flexibility in optical network design. Nonlinear effects in the transmission fiber and amplified spontaneous emission noise limit the performance and therefore dictate the design of long-distance amplified systems, especially those employing Wavelength Division Multiplexing. As for the problems of complexity and long cycle in the DWDM design, part of problems needed to be considered in DWDM link design. The maximum possible transmission distance has been reported to be dependent on various system parameters like number of channels, channel spacing, the allowable power per channel, the amplifier spacing etc. In my project, the hardware implementation of a four lamda point-to-point DWDM link was established. The same model simulated in the simulation software, OPTSIM was utilized for the study of DWDM system to analyze its performance. Simulation software was utilized for the analysis of non-linear effect in DWDM system and power limit employed in DWDM systems. Different performance parameters like bit-error rate (BER), Q-factor, Eye-pattern etc were observed through the simulation software. So a comparison of hardware implementation with that of simulation software was carried out to analyze the performance. Thus an optimized point-to-point DWDM link design, simulation and its performance analysis was carried out effectively.

My research focus is to go deep into the DWDM technology and explore new concepts on DWDM and the impact of non-linear effects in the transmission fiber on the optical link design. The future of DWDM system is Ultra-dense wavelength division multiplexing system (UDWDM). Ultra-Dense Wavelength Division Multiplexing (UDWDM) is the science and technology of packing optical communication channels as closely as physically possible on a single optical fiber or any other optical medium. While the UDWDM concept originated in long-haul fiber-optic communications, it is also expected to be a key enabling technology for future massively parallel computing systems. Currently, much research in optical communications is focused on increasing the bit-rate of individual optical channels from 10 Gb/s to 160 Gb/s. This “high-speed” approach faces serious obstacles due to fiber chromatic dispersion (CD) and

polarization-mode dispersion (PMD) since the dispersion penalty scales roughly as square of bit-rate. An alternative equally valid approach for increasing transmission capacity, which however has not received as much attention, is to scale DWDM channel spacing to ultra-dense dimensions of ~ 10 GHz, while keeping the bit rate fixed at 10 Gb/s. This latter approach is known as Ultra-dense WDM (UDWDM). The development of 10 Gb/s UDWDM technology would enable continued advancement in fiber-optic transmission capacity without requiring dramatic upgrades in infrastructure (i.e. new fiber, Raman distributed amplification, per-channel PMD compensation, etc.) . Moreover, 10 Gb/s UDWDM may be the only practical way for Si-based optical interconnects to approach the capacity of optical fiber since Si-based optoelectronic devices are unlikely to ever attain speeds greater than 10 Gb/s.

I would also like to focus on the Non-linear effects in the transmission fiber like Colour-Wave mixing (for example: Four- wave mixing) which is an emerging point of research these days. FWM is a nonlinear process in optical fibers in which generally three signal frequencies combine and produce several mixing products. It originates from the weak dependence of the fiber refractive index on the intensity of the optical wave propagating along the fiber through the third order nonlinear susceptibility. FWM efficiency depends on channel power, channel spacing and fiber dispersion but is independent of the bit rate. FWM efficiency is also a function of signal polarization. In FWM efficiency versus channel spacing for different dispersion values, it can be seen that low dispersion fiber have a higher FWM efficiency than high dispersion fibers and efficiency decreases with increase in channel spacing. High-order harmonic generation (HHG) is a strongly nonlinear process in which the frequency of a fundamental laser is up-converted into its harmonics. Studies of the dynamics of free electron wave-packets in atoms/molecules require ultrashort pulses with temporal duration in the attosecond range. In one of the recent reports, the time-delay-dependence intensity of the phase-matched mixing waves is proposed to provide the evolution information of free electron wave-packets.

I can apply my theoretical and mathematic skills in the development of useful and novel methodologies.

University of Mumbai
मुंबई विद्यापीठ

We,

the Chancellor, Vice-Chancellor
and
Members of the Management Council
confer the Degree of

Bachelor of Engineering

(in its Electronics Engineering Branch)
on
Pooja S.Mohan
Lokmanya Tilak Jankalyan Shikshan Sanstha's
Lokmanya Tilak College of Engineering
in the **First Class with Distinction**
for the examination held in May 2008
at the Convocation
held on 30th December, 2008.

आम्ही,

कुलपती, कुलगुरू
आणि
व्यवस्थापन परिषदेचे सदस्य

अभियांत्रिकी स्नातक

(इलेक्ट्रॉनिक्स अभियांत्रिकी शाखा)
ही पदवी
मे २००८ मधील परीक्षेत
प्रथम श्रेणीत विशेष प्राविण्यासह उत्तीर्ण झाल्याबद्दल
पुजा एस.मोहन
लोकमान्य टिळक जनकल्याण शिक्षण संस्थेचे लोकमान्य टिळक कॉलेज
ऑफ इंजिनिअरिंग
यांना
३० डिसेंबर, २००८ च्या
दीक्षान्त समारंभात प्रदान करीत आहोत.

BENG-2008-09664-10210

Vice-Chancellor / कुलगुरू

8252264

Register No. 92011009 APR 2012

0060690

Cochin University of Science and Technology

FACULTY OF TECHNOLOGY

The ***Academic Council*** *of the* Cochin University of Science and Technology *hereby makes known that*

Pooja S Mohan

has been awarded the

DEGREE OF MASTER OF TECHNOLOGY

in **Electronics(Optoelectronics & Communication Systems)**

he/she having undergone the prescribed course of study and having been certified by duly appointed examiners to be qualified to receive it and placed by them in the

First Class with Distinction

at the Examination held in **April, 2012**

Given under the Seal of the University

University Buildings,
Kochi - 682 022.
Dated 06-06-2013

R Chandra

Vice-Chancellor.

Sl.No: 0060690

University of Mumbai

No. 270

Certificate showing the number of marks gained by

Shri Pooja S Mohan in each head of passing at the

Bachelor of Engineering (B.E.) (Electronics Engineering) Degree (Revised Course) Examination of May 2008

Seat No. 9664

Heads of Passing

Elective : ☐ Advanced Digital Signal Processing ☑ Robotics

☐ Biomedical Instrumentation ☐ Telecom Network Management

☐ Embedded Systems & Real Time Programming ☐ VLSI Design

	Paper I			Paper II			Paper III			Paper IV			Paper V		Total of Semester VIII	Total of Semester VII	Grand Total	Remarks
	Power Electronics			Data Communication & Networking			Mechatronics			Elective			Project B					
	Written	Term Work	Oral	Written	Term Work	Oral	Written	Term Work	Oral	Written	Term Work	Oral	Term Work	Oral				
Maximum Marks	100	25	25	100	25	25	100	25	25	100	25	25	50	50	700	725	1425	First Class With Distinction
Minimum for passing	40	10	10	40	10	10	40	10	10	40	10	10	20	20	-	-	-	
Marks Obtained	55	24	24	74	24	24	61	24	24	73	24	24	48	48	551	564+	1115	

Received Fee Rs. 50/-/100/- Entered by

Result declared on 8/8/2008 Checked by

Result amended on - Read by

Mumbai, 18 OCT 2010 Assistant Registrar Controller of Examinations

#-O.229, @ O.5042/O.5043, *5045, F-Head of the Failure, +-Marks Carried Over, E-Exemption in the Head, --Not Applicable, A-Absent, /-Female, × Sem. VII Passed with Exemption.

UNIVERSITY OF MUMBAI

No. 003073

L.T.J.S.S's

Lokmanya Tilak College of Engineering, Navi Mumba

STATEMENT OF MARKS AT T.E. (ELECTRONICS ENGG.) SEM - VI (REVISED COURSE) R-2001 MAY/JUNE-2007

NAME POOJA S. MOPAN / SEAT NO. E-6136

	Microwave & Fiber Optic Communication			Analog Integrated Circuits & Applications			Communication Systems			Discrete Time Signal Processing			Computer Organisation			Industrial Economics & Management	Total of Sem.-VI	Total of Sem.-V	Grand Total of Sem .V & VI	Rem
	TH	T/W	ORAL	TH	T/W	ORAL	TH	T/W	ORAL	TH	T/W	ORAL	TH	T/W	ORAL	TH				
MAX.	100	25	25	100	25	25	100	25	25	100	25	25	100	25	25	100	850	675	1525	
MIN.	40	10	10	40	10	10	40	10	10	40	10	10	40	10	10	40				
Marks Obtd.	69	24	23	79	24	23	66	24	24	92	24	24	69	21	23	58	670	539 $	1209	First Clas
Grace Marks																				

@-: 0.5042,0.5043,0.5044; *-:0.5045; +:- Marks Carried ; RS.-RESULT RESERVED FOR LOWER SEMESTER;

$-: SEM-5 CLEARED WITHOUT EXEMPTION; #-: SEM-5 CLEARED WITH EXEMPTION. ; E-: EXMP CAN BE CLAIMED

Date 13 OCT 2010

Entered by

Checked by

Verified by

Division First Class

LOKMANYA TILAK COLLEGE OF ENGG. NAVI MUMBAI

Principal

Lokmanya Tilak College of Engineering

Navi Mumbai

UNIVERSITY OF MUMBAI

№ 023427

L.T.J.S.S's

Lokmanya Tilak College of Engineering, Navi Mumbai

STATEMENT OF MARKS AT S.E. (ELECTRONICS ENGG). SEM - IV (REVISED COURSE) MAY/JUNE-2006

NAME POOJA S. MOHAN / SEAT NO. E-4142

	Applied Maths - IV	Electronics Circuits Analysis & Design-II				Control System Engg.			Electrical Machines & Instruments			Principles of Microprocessor Systems			Digital Design - II				Total of Sem.-IV	Total of Sem.-III	Grand Total of Sem III & IV	Remarks
	TH	TH	T/W	PRCT	ORAL	TH	T/W	ORAL	TH	T/W	ORAL	TH	T/W	ORAL	TH	T/W	PRCT	ORAL				
MAX	100	100	25	25	25	100	25	25	100	25	25	100	25	25	100	25	25	25	900	725	1625	
MIN	40	40	10	10	10	40	10	10	40	10	10	40	10	10	40	10	10	10				
Marks Obtd.	82	54	23	23	23	88	24	22	80	24	23	73	23	23	61	24	23	23	716	528 $	1244	First Class
Grace Marks																						

@-: 0.5042,0.5043,0.5044; *-:0.5045; +-: Marks Carried ; RS.-RESULT RESERVED FOR LOWER SEMESTER;
$-: SEM3 CLEARED WITHOUT EXEMPTION; #-: SEM3 CLEARED WITH EMEMPTION.

20 JUL 2006

Date _____

Entered by _____

Checked by _____

Verified by _____

LOKMANYA TILAK COLLEGE OF ENGG * NAVI MUMBAI *

Division First Class

Principal
Lokmanya Tilak College of Engineering
Navi Mumbai

University of Mumbai

No. 763

Certificate showing the number of marks gained by

Shri Pooja S Mohan in each head of passing

at the FIRST YEAR ENGINEERING (Semester II) (Revised Course) Examination of May 2005

Seat No.	Heads of Passing										Total of Semester II	Total of Semester I	Grand Total of Semesters I & II	Remarks
	1	2		3		4		5		6				
	Applied Mathematics II	Applied Sciences II		Communication Skills		Engineering Drawing		Computer Programming II		Basic Workshop Practice II				
	Written	Written	Term Work	Written	Term Work	Written	Term Work	Written	Term Work	Term Work				
10924														
Maximum Marks	100	100	25	100	25	100	25	100	25	100	700	600	1300	First class
Minimum for passing	40	40	10	40	10	40	10	40	10	40	–	–	–	
Marks Obtained	76	74	23	57	22	58	24	47	24	68	473	353+	826	

Received Fee Rs. 50/-/100/- Entered by

Result declared on 8/8/2005 Checked by

Result amended on – Read by

Mumbai, 18 OCT 2010

Assistant Registrar

Controller of Examinations

#-O 229, @-O 5042 /-O 5043, *-O 5045, F-HEAD OF FAILURE, +-MARKS CARRIED, E-EXEMPTION IN THE HEAD, A-ABSENT, --NOT APPLICABLE, /-FEMALE X Sem I Passed with Exemption.

Cochin University of Science and Technology

KOCHI - 682 022, INDIA

Serial No. : 191808

Section : ET

MEMORANDUM

Dated : 13.07.2012

FACULTY OF TECHNOLOGY — MODEL ENGINEERING COLLEGE THRIKKAKARA

The following is the cumulative grades awarded to POOJA S.MOHAN at the M Tech Degree Examination in in Electronics with Opto Electronics and Communication Systems April 2012

Register No: 92011009

Course Code	Course Title		Credits	Grade
Semester 1				
OEC3101	Digital & Optical Signal Processing	Core	3	A
OEC3102	Fiber Optics	Core	3	A
OEC3103	Optoelectronics	Core	3	A
OEC3103A	Seminar	Core	1	A
OEC3104	Laser Technology	Elective	3	A
OEC3105	Digital Communication	Elective	3	B
OEC3108L	Optoelectronics Lab	Core	1	A
OEC3109L	Signal Processing Lab	Core	1	A
	Semester 1 Credits acquired: Core: 12 Elective: 6			**GPA: 8.83**
Semester 2				
OEC3201	Biophotonics	Core	3	A
OEC3202	Optical Communication Technology	Core	3	A
OEC3203	Optical Sensor Technology	Core	3	A
OEC3204	Laser Based Instrumentation	Elective	3	A
OEC3206	Industrial Photonics	Elective	3	A
OEC3208L	Fiber Optics Lab	Core	1	A
OEC3209L	Optical Communication Lab	Core	1	A
OEC3210	Seminar	Core	1	A
	Semester 2 Credits acquired: Core: 12 Elective: 6			**GPA: 9.00**
Semester 3				
OEC3301	Project Progress Evaluation	Core	18	A
	Semester 3 Credits acquired: Core: 18 Elective: 0			**GPA: 9.00**
Semester 4				
OEC3401	Project Dissertation Evaluation	Core	18	A
	Semester 4 Credits acquired: Core: 18 Elective: 0			**GPA: 9.00**
	Total Credits acquired: Core: 60 Elective: 12			**CGPA: 8.96**

KOCHI 682 022

MODEL ENGINEERING COLLEGE

(Managed by IHRD, an Establishment of Govt. of Kerala)
Thrikkakara P.O., Kochi - 682 021, Ernakulam Dist., Kerala

17748

TRANSFER CERTIFICATE

1.	Name of the Institution	: Model Engg. College
2.	Name of the Pupil	: Pooja. S. Mohan
3.	Admission Number	: 46/10
4.	Nationality	: Indian
5.	Community & Religion	: Hindu, Nair
6.	Whether the Candidate belongs to SC/ST community	: —
7.	Date of birth according to Admission Register	: 12.9.1986
8.	Course to which the pupil was enrolled	: M.Tech Opto Electronics & Communication
9.	Date of Admission or Promotion to the class	: 15.9.2010
10.	Wheather qualified for Promotion to a higher class	: Yes
11.	Date of the student's last attendance at the Institution	: 16.5.2012
12.	Date on which the name was removed from rolls	: 16.5.2012
13.	Date of application for certificate	: 10.8.2012
14.	Reason for leaving	: Course Completed
15.	Institution to which the student intends to proceed	: —
16.	No. of working days till date	: —
17.	No. of days the student attended	: —

Date : 18/8/12

(Seal)

PRINCIPAL
MODEL ENGINEERING COLLEGE
THRIKKAKARA, COCHIN-21

PRINCIPAL

dubas

GLX SERIES
6K TO 480KVA
UPS systems for Global applications

Ref: LG/HR&A/RL/014/12-13

Date: 26.12.2012

TO WHOMSOEVER IT MAY CONCERN

This is to certify that **Ms. POOJA S. MOHAN** (Emp. Code: DU00789) has worked as Trainee Engineer in R & D department in our organization from 8th December 2008 to 16th September 2010. She has been relieved from the services with mutual consent. During her tenure of service with us she was found to be sincere and hardworking.

She has left this organisation on her own accord.

We wish her all the success in her future endeavors.

For DUBAS ENGINEERING PVT.LTD.,

DIRECTOR

dubas engineering pvt. ltd.,
No.43 (P), Phase - II, Electronics City
Hosur Main Road, Bangalore - 560 100, INDIA

Phone : 080-4033 6000 (30 Lines)
Fax : 080-4033 6222
E-mail : info@dubaspower.com

www.dubaspower.com

SREE BUDDHA COLLEGE OF ENGINEERING

PATTOOR P.O., ALAPPUZHA DIST., KERALA. PIN - 690 529

Approved by AICTE, New Delhi & Affiliated to APJ Abdul Kalam Technological University, Kerala

Tel.0479-2375440,42,43. e-mail: principal@sbce.ac.in / sreebuddha@ktu.edu.in website: www.sbce.ac.in

Managed by Sree Buddha Educational Society, Kollam - 691 021

NBA ACCREDITED PROGRAMMES

No. SBCE/ 1641 /2020-21

09.12.2020

EXPERIENCE CERTIFICATE

This is to certify that Ms. Pooja S Mohan , Department of Electronics & communication , has been working in this institution as Assistant Professor from 04.06.2012 to till date. Her conduct and character are good.

This certificate is issued on her request so as to enable her to apply for part-time PhD registration.

9/12/2020

PRINCIPAL

9/12/2020 (AD)

SREE BUDDHA COLLEGE OF ENGINEERING ★ PATTOOR P.O., MAVELIKARA-690529 ★ ALAPPUZHA Dist.

आयकर विभाग

INCOME TAX DEPARTMENT

भारत सरकार

GOVT. OF INDIA

POOJA S MOHAN

JAYAMOHAN

12/09/1986

Permanent Account Number

AWSPP9456D

Signature

इस कार्ड के खोने / पाने पर कृपया सूचित करें / लौटाएं :
आयकर पैन सेवा इकाई, एन एस डी एल
पहली मंजिल, टाईम्स टॉवर, कमला मिल्स कम्पाउंड,
एस. बी. मार्ग, लोअर परेल, मुम्बई - 400 013.

If this card is lost / someone's lost card is found, please inform / return to :
Income Tax PAN Services Unit, NSDL
1st Floor, Times Tower,
Kamala Mills Compound,
S. B. Marg, Lower Parel, Mumbai - 400 013.

Tel: 91-22-2499 4000, Fax: 91-22-2495 0664,
e-mail: tininfo@nsdl.co.in

ELECTION COMMISSION OF INDIA

ELECTOR PHOTO IDENTITY CARD

LKX1490978

NAME : Pooja S.Mohan

FATHER'S NAME : Jayamohan

ലിംഗം/ SEX : സ്ത്രീ / Female

ജനനതീയതി / വയസ്സ്
DATE OF BIRTH/AGE : 12/09/1986 / 28

മേൽവിലാസം : 33/270, മണിഭവനം, ചിറക്കടവം, കായംകുളം 690502

ADDRESS : 33/270, Moni Bhavan, Chirakkadavom, Kayamkulam 690502

ഇലക്ടറൽ രജിസ്ട്രേഷൻ ഓഫീസർ
Date: 27/06/2015 ELECTORAL REGISTRATION OFFICER

അസംബ്ലി നിയോജകമണ്ഡലം : 108, കായംകുളം
നമ്പും പേരും

ASSEMBLY CONSTITUENCY No. & : 108, KAYAMKULAM
NAME

പാർട്ട് നമ്പർ : 92
PART No.

NOTE / കുറിപ്പ്

1. Mere possession of this card is no guarantee that you are elector in the current electoral roll. Please check your name in the current electoral roll before every election.

1. ഈ കാർഡ് കൈവശമുള്ളത് കൊണ്ട് മാത്രം നിലവിൽ നിലവിലുള്ള വോട്ടർ പട്ടികയിൽ ഒരു സമ്മതിദായകൻ ആകണമെന്നില്ല. മാത്രമല്ല തെരഞ്ഞെടുപ്പിനും മുമ്പായി നിലവിലുള്ള വോട്ടർ പട്ടികയിൽ നിങ്ങളുടെ പേര് ഉണ്ടായിരിക്കണമെന്നും ശ്രദ്ധിക്കുമല്ലോ.

2. Date of Birth mentioned in this card shall not be treated as a proof of age/D.O.B. for any purpose other than registration in electoral roll.

2. ഈ കാർഡിൽ സൂചിപ്പിച്ചിട്ടുള്ള ജനനതീയതി വോട്ടർ പട്ടികയിൽ പേരിടുന്നതിനുവേണ്ടി അല്ലാതെ മറ്റൊരാവശ്യത്തിനും തെളിവായി സ്വീകരിക്കുന്നതല്ല എന്നു ശ്രദ്ധിക്കുമല്ലോ.

0911 100 002 0028

201508830715

SREE BUDDHA COLLEGE OF ENGINEERING

PATTOOR P.O., ALAPPUZHA DIST., KERALA. PIN - 690 529

Approved by AICTE, New Delhi & Affiliated to APJ Abdul Kalam Technological University, Kerala

Tel.0479-2375440,42,43. e-mail: principal@sbce.ac.in / sreebuddha@ktu.edu.in website: www.sbce.ac.in

Managed by Sree Buddha Educational Society, Kollam - 691 021

NBA ACCREDITED PROGRAMMES

No. SBCE/ 1640 /Ph.D/2020-21

09.12.2020

ANNEXURE -1

CERTIFICATE FROM THE ORGANISATION WHERE THE CANDIDATE IS EMPLOYED

Certified that ~~Mr~~/ Ms/ ~~Mrs~~/ Ms. Pooja S Mohan is employed as Assistant Professor in the Department of Electronics & communication Engineering of Sree Buddha College of Engineering, Pattoor

We have no objection in forwarding her application for the part time Ph. D Research programme.

The Candidate will be permitted to undertake part time study in the university/ College and will be allowed to be present for discussion with the supervisor, attending course works, conduct of experiments and participations in seminars and related presentations. Further the required facilities at our organization will also be provided to the candidate for doing research.

9/12/2020

Date:09.12.2020

Signature of the Head of organization with office seal

9/12/2020 (AD)

SREE BUDDHA COLLEGE OF ENGINEERING ★ PATTOOR P.O. ALAPPUZHA Dist.