PERIYAR UNIVERSITY SALEM – 11



M. Sc., ELECTRONICS AND COMMUNICATION

Syllabus and Regulations Under Choice Based Credit System

(Effective from 2008 – 2009)

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M. Sc., ELECTRONICS AND COMMUNICATION Regulations {Effective from 2008 – 2009}

1. CONDITION FOR ADMISSION

A candidate who has passed B.Sc., Electronics and Communication /B.Sc (Electronics) / B.Sc (Physics) / B.Sc (Instrumentation) /B.Sc (Industrial Electronics). / B.Sc (Biomedical Instrumentation) / B.Sc (Computer Science) / B.Sc Information Science/ B.C.A. degree of this University or any of the above degree of any other university accepted by the syndicate as equivalent thereto, subject to such condition as may be prescribed therefore shall be permitted to appear and qualify for the <u>M.Sc Electronics and Communication</u> degree examination of this university after a course of study of two academic years.

2. DURATION OF THE COURSE:

The course for the degree of Master of Electronics and Communication shall consist of two academic years divided in to four semesters. Each semester consist of 90 working days.

3. COURSE OF STUDY

The course of study shall comprise instruction in the following subjects according to the syllabus and books prescribed from time to time.

4. EXAMINATIONS

The examination shall be three hours duration to each paper at the end of each semester. The candidate failing in any subject(s) will be permitted to appear for each failed subject(s) in the subsequent examination.

Extra Disciplinary Course (EDC) is introduced in the second semester. The Students should select any one EDC paper offered by other departments.

Practical examinations for PG course should be conducted at the end of the odd/ even semester.

At the end of fourth semester viva-voce will be conducted on the basis of the dissertation / project report submitted by the student. The Viva – voce will be conducted by one internal and one external examiners jointly.

5. SCHEME OF EXAMINATIONS

The scheme of examinations under CBCS (Choice Based credit System) for different semesters shall be as follows.

Sem	Code	Course	Hrs		Credit	Marks		
			Lecture	Tutorial		CIA	EA	TOTAL
I	P08EC101	Core 1	4	2	5	25	75	100
	P08EC102	Core 2	4	2	5	25	75	100
	P08EC103	Core 3	4	2	5	25	75	100
	P08EC1E1	Elective 1	2	4	4	25	75	100
	P08EC1P1	Core Practical 1	1	2	2	40	60	100
	P08EC1P2	Core Practical 2	1	2	2	40	60	100
	P08EC204	Core 4	4	2	5	25	75	100
	P08EC205	Core 5	4	2	5	25	75	100
	P08EC2E2	Elective 2	2	4	4	25	75	100
II	P08EC2P3	Core Practical 3	1	2	2	40	60	100
	P08EC2P4	Core Practical 4	1	2	2	40	60	100
	P08EC2ED	EDC 1(or)EDC 2	4	0	4	25	75	100
		Human Rights	2	0	2	25	75	100
III	P08EC306	Core 6	4	2	5	25	75	100
	P08EC307	Core 7	4	2	5	25	75	100
	P08EC308	Core 8	4	2	5	25	75	100
	P08EC3E3	Elective 3	2	4	4	25	75	100
	P08EC3P5	Core Practical 5	1	2	2	40	60	100
	P08EC3P6	Core Practical 6	1	2	2	40	60	100
IV	P08EC409	Core 9	4	2	5	25	75	100
	P08EC410	Core 10	4	2	5	25	75	100
	P08EC4E4	Elective 4	2	4	4	25	75	100
	P08EC4P7	Core Practical 7	1	2	2	40	60	100
	P08EC4P8	Core Practical 8	1	2	2	40	60	100
	P08EC4PJ	Core Project	2	4	4	40	60	100
					92	i.		2500

6. QUESTION PAPER PATTERN:

For theory: External:

Time: 3 Hours

Max. Marks - 75 $PART - A: 5 \times 5 = 25$

(Answer all questions) (Two questions from each unit with internal choice) $PART - B : 5 \ge 10 = 50$ (Answer all questions) (Two questions from each unit with internal choice)

Internal :

Max.Marks : 25 Test :10 Assignment :5 Seminar :5 Attendance :5 Total :25

For Practical :

Time : 4 Hours.

Max. Marks – 60

One Question (Either OR type)

7. DISSERTATION (100 Marks)

a. Topic

The topic of the dissertation shall be assigned to the candidate before the end of first semester and a copy of the same should be submitted to the University for Approval.

b. Advisory committee

Each guide shall have a maximum of five students in science and maximum of seven for all Arts subjects.

There will be an advisory committee consisting of the guide as chairman and one member from the same department or allied departments of the college and a third member should be from other college preferably from Aided / Government colleges in the case of self financing college and vice – versa.

c. Plan of work

The student should prepare a plan of work for the dissertation, get the approval of the advisory committee and should be submitted to the university during the second semester of their study. In case the student wants to avail the facility from other University / Laboratory, they will undertake the work with the permission of the guide and acknowledge the alien facilities utilized by them.

The duration of the dissertation research shall be a minimum of three months in the fourth semester.

d. Dissertation workout side the college of study

In case the student stays away for work from the college for more than one month, specific approval of the University should be obtained.

e. No. of Copies/ Distribution of Dissertation

The students should prepare three copies of dissertation and submit the same for the evaluation by examiners. After evaluation one copy is to be retained in the college library and one copy is to be submitted to the University (Registrar) and one copy can be held by the student.

f. Format to be followed

The formats / certificate for dissertation to be submitted by the students are given below:

Format for the preparation of project work :

- a. Title page
- b. Bonafide certificate
- c. Acknowledgement
- d. Table of content

CHAPTER NO.	TITLE	PAGE NO
1.	Introduction	
2.	Review of literature	
3.	Materials and methods	
4.	Results	
5.	Discussion	
6.	Summary	
7.	Reference	

CONTENTS

Format of the title page:

TITLE OF THE DISSERTATION

Dissertation submitted in part fulfillment of the requirement for the degree

of Master of Science / Master of Arts in _____

to the Periyar University, Salem-636 011.

By

Students name:Register Number:

College / University Department

Year

Format of the Certificate:

CERTIFICATE

Date: Place:

Chairman, Advisory Committee,

Approved by Chairman:

Members:

1.

2.

External Examiner

Guidelines for approval of PG guides for guiding students in their research for submitting dissertation.

1. M.Sc. / M.A. (Part fulfillment) Guide :

The person seeking for recognition as guide should have.

- M.Phil / M.A/ M.Sc degree with first class / second class
- Should have 3 years of active teaching / research experience.

2. They should have published at least one research paper in a National journal authored solely or jointly. Procedure for submitting application for approval as guides

- a. The University will on request give prescribed application form.
- b. The filled in applications should be submitted before the close of said date by the University.
- c. All such applications should be routed through the Principal of their respective institutions with specific recommendations.
- d. All relevant proofs should be submitted along with the applications.

3. Approval

The committee constituted for the purpose will scrutinize the applications and recommend for approval / rejection.

Orders will then be passed by the authority of the university and communicated to each member individually through the Principal.

8. PASSING MINIMUM

The candidate shall be declared to have passed the examination if the candidate secures not less than 50 marks out of 100 marks in the University examination in each paper.

For the practical paper, a minimum of 50 marks out of 100 marks in the University examination and the record notebook taken together. There is no passing minimum for the record notebook. However submission of a record notebook is a must.

For the project work and viva voce a candidate should secure 50% of the marks for pass. The candidate should compulsory attend viva voce examination to secure pass in that paper.

Candidate who does not obtain the required minimum marks for a pass in a paper/ project report shall be required to appear and pass the same at a subsequent appearance.

9. CLASSIFICATION OF SUCCESSFUL CANDIDATES

Candidates who secure not less than 60% of the aggregate marks in the whole examination shall be declared to have passed the examination in First Class.

All other successful candidates shall be declared to have passed in the Second Class.

Candidates who obtain 75% of the marks in the aggregate shall be deemed to have passed the examination in First Class with Distinction; provided they pass all the examinations prescribed for the course at the first appearance.

Candidates who pass all the examinations prescribed for the course in the first instance and within a period two academic years from the years of admission to the course only are eligible for University Ranking.

10. MAXIMUM DURATION FOR THE COMPLETION OF THE PG PROGRAMME

The maximum duration for completion of the PG programme shall not exceed eight semesters.

11. COMMENCEMENT OF THIS REGULATION

These regulations shall take effect from the academic year 2008-09, i.e., for students who are to be admitted to the first year of the course during the academic year 2008-09 and thereafter.

12. TRANSITORY PROVISION

Candidates who are admitted to the PG course of study before 2008-2009 shall be permitted to appear for the examinations under those regulations for a period of three years i.e, up to and inclusive of the examination of April / May 2011. Thereafter, they will be permitted to appear for the examination only under the regulations then in force.

13. REGULATIONS OF PROJECT WORK

- a. Students should do their three months project work in company / institutions.
- b. The candidate to the department should submit the format which includes the topic of the dissertation, and the same should be submitted to the University for approval.
- c. Each internal guide shall have maximum of FIVE students.
- d. Periodically the project should be reviewed minimum three times by the advisory committee consisting of the guide and one member from

the same department and the third member (Minimum 5 years experience) should be from other institutions / organization.

e. The students should use OHP/Power Point Presentation during their project Viva Voce examinations.

OBJECTIVES:

- 1. The syllabus of M.Sc., Electronics and Communication is enriched and necessary changes have been made in the course pattern and papers. This will enable the students to acquire through knowledge both in theory and practical.
- 2. Since, the course is paraprofessional enough practical training is necessary when the student goes to industries. Hence at the end of every semester the practical papers are included in the syllabus to meet out this demand.
- 3. After successful completion of this course a student can pursue higher engineering courses like M.E / M.Tech /M.S with good GATE Score.
- 4. The thrust in given is the curriculum by considering various recent developments in Electronics & Communication, Bio-medical Instruments and Networking. This exposure will make, the students to be eligible for service / Engineering in the field of Electronic industries / Communication Industries / Bio-medical Industries / Networking Companies and Software Industries.

SUGGESTIONS:

- 1. Masters in Science on Electronics and Communication covers the basic topics of the field; however regular updating of the syllabus is necessary according to the recent developments in this field.
- 2. To enhance the quality of the teachers those who are teaching this course shall be given short-term training programmes in the emerging fields.

Sem	Code	Course	Hrs		Credit	Marks		
			Lecture	Tutorial		CIA	EA	TOTAL
	P08EC101	Core 1	4	2	5	25	75	100
	P08EC102	Core 2	4	2	5	25	75	100
Ι	P08EC103	Core 3	4	2	5	25	75	100
	P08EC1E1	Elective 1	2	4	4	25	75	100
	P08EC1P1	Core Practical 1	1	2	2	40	60	100
	P08EC1P2	Core Practical 2	1	2	2	40	60	100
	P08EC204	Core 4	4	2	5	25	75	100
	P08EC205	Core 5	4	2	5	25	75	100
	P08EC2E2	Elective 2	2	4	4	25	75	100
II	P08EC2P3	Core Practical 3	1	2	2	40	60	100
	P08EC2P4	Core Practical 4	1	2	2	40	60	100
	P08EC2ED	EDC	2	4	4	25	75	100
	P08EC306	Core 6	4	2	5	25	75	100
	P08EC307	Core 7	4	2	5	25	75	100
	P08EC308	Core 8	4	2	5	25	75	100
III	P08EC3E3	Elective 3	2	4	4	25	75	100
	P08EC3P5	Core Practical 5	1	2	2	40	60	100
	P08EC3P6	Core Practical 6	1	2	2	40	60	100
	P08EC409	Core 9	4	2	5	25	75	100
	P08EC410	Core 10	4	2	5	25	75	100
	P08EC4E4	Elective 4	2	4	4	25	75	100
IV	P08EC4P7	Core Practical 7	1	2	2	40	60	100
	P08EC4P8	Core Practical 8	1	2	2	40	60	100
	P08EC4PJ	Core Project	2	4	4	40	60	100
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List of Core Courses: (Theory)

- 1. P08EC101 Electronic Devices and Circuits
- 2. P08EC102 Advanced Digital Electronics
- 3. P08EC103 Analog and Digital Communication System
- 4. P08EC204 Advanced Microprocessor and Interfacing
- 5. P08EC205 Data Communication and Networking
- 6. P08EC306 C++ and JAVA Programming
- 7. P08EC307 Optical Fiber Communication
- 8. P08EC308 Embedded System
- 9. P08EC409 Digital Signal Processing
- 10. P08EC410Power Electronics

List of Core Courses: (Practical)

1. P08EC1P1	Electronic Circuits lab
2. P08EC1P2	Advanced Digital Electronics lab
3. P08EC2P3	Analog and Digital Communication lab
4. P08EC2P4	Advanced Microprocessor and Interfacing lab
5. P08EC3P5	C++ and JAVA Programming lab
6. P08EC3P6	Embedded System lab
7. P08EC4P7	Digital Signal Processing lab
8. P08EC4P8	Power Electronics lab

List of Elective Courses:

1. P08EC1E1	IC Fabrication and its Applications
2. P08EC2E2	Bio-Medical Instrumentation Engineering
3. P08EC3E3	VLSI System
4. P08EC4E4	Mobile Communication

List of Extra Disciplinary Courses offered by the Department:

1. P08EC2ED Embedded System with Real Time Applications

List of Extra Credit Courses offered by the Department:

- 1. P08ECEX1 Communication Network Architecture
- 2. P08ECEX2 Advanced Network Communication
- 3. P08ECEX3 RF System Design
- 4. P08ECEX4 Microwave and RADAR Communication
- 5. P08ECEX5 Biometrics
- 6. P08ECEX6 Artificial Neural Networks

Paper : Core 1 – Electronic Devices and Circuits Code : P08EC101

Hours : 6 Hrs / Week Marks: 100 marks

UNIT I Diode Circuit Analysis

Introduction to semiconductor - n type and p type – Diode theory – DC load line analysis – Small Signal analysis – Dynamic Resistance – AC load line analysis – Diode array – Function generation- Diode capacitance – Schootty diode – Zener Diode – PIN diode – IMPACT diode – Tunnel diode – Gunn diode – Photodiodes – LASER diode – Applications Half wave and Full wave rectifiers Voltage regulation – ripple factor – comparison of rectifier circuits – Filters – Regulated Power Supply – Clipper and Clampers.

UNIT II Bipolar Junction Transistor and Field Effect Transistor

Bipolar junction transistors construction and operation – Transistor biasing – types of configuration – breakdown in transistors – Bias stability – Method of Transistor biasing – Bias compensation - Field Effect transistor – construction – operation – characteristic parameter of JFET Comparision of JFET with BJT. Applications of JFET – MOSFET enhancement and depletion. Comparision of MOSFET with JFET – FET biasing – FET as voltage variable resistor (VVR) – Charge Transfer Device (CTD's).

UNIT III Thyristors

Introduction to Thyristors – construction, operation characteristics and applications of SCR, LASCR, TRIAC, DIAC AND UJT – Thyristor rating – Rectifier circuits using SCR.

UNIT IV Amplifiers

Introduction – classification of amplifiers – Single stage amplifiers (CE, CB & CC) – Small signal analysis of single stage BJT amplifiers – FET amplifiers (CS & CD) – classification of amplifiers based on biasing condition (Class A, Class B, Class C, Push Pull, Complementary Symmetry Push Pull amplifier – Multistage amplifier – Tuned amplifier – RF amplifier – Video amplifier.

UNIT V Oscillators

Introduction – Classification of oscillators – Condition for oscillation (Barkhausen Criterion) – LC oscillator – Hartley oscillator – Colpitts oscillator – Tuned Collector oscillator – RC oscillator – Wien Bridge oscillator – Phase Shift oscillator – Crystal oscillator – Frequency stability of oscillators – Multivibrators – Astable, Monostable and Bistable – Schmitt Trigger – Time Base circuits.

Text Books :

- 1. Allen Mottershead Electronic Devices and Circuits Prentice Hall of India Private Ltd, New Delhi. ISBN-81-203-0124-2.
- S.Salivahanan, N.Suresh Kumar and A.Vallavaraja Electronic Devices and Circuits - Tata McGraw Hill Publishing Company Ltd, New Delhi. ISBN 0-07-463386-4.

Reference Books :

- 1. Donald L.Schilling and Charles Belove Electronic Circuits 3rd Edition McGraw Hill International Edition. ISBN 0-07-100602.
- David A.Bell Electronic Devices and Circuits 4rd Edition Prentice Hall of India. ISBN -81-203-2358-0.
- 3. Boylestad and Nashelsky Electronic Devices and Circuit theory 6th Edition, Prentice Hall of India.
- 4. Bernard Grob Electronic Circuits and Applications McGraw Hill International Edition. ISBN 0-07-024931-8.
- 5. Jacob Millman and Christos C Halkias Electronic Devices and Circuits Tata McGraw Hill Publishing Company Ltd, New Delhi. ISBN 0-07-462243-9.
- 6. B.L.Theraja and A.K.Theraja Electronic Devices and Circuits S.Chand & Company Ltd, New Delhi. ISBN 81-219-1851-0.
- 7. V.K. Metha Principles of Electronics S.Chand & Company Ltd, New Delhi. ISBN 81-219-2450-2.

Paper : Core 2 - Advanced Digital Electronics Code : P08EC102

Hours : 6 Hrs / Week Marks: 100 marks

UNIT I Number Systems and Binary Codes

Decimal System, Binary Systems, Octal Systems, Hexadecimal number systems – Conversions Binary addition, multiplication and division. – Double precision numbers – Floating point representation – 1's complement – 2's complement addition and subtraction. Binary coded decimal numbers (BCD) – Excess 3 code – Gray code – Alphanumeric codes – Weighted codes – Code Conversions – Parity method for error detection and correction.

UNIT II Boolean Algebra – Logic Gates – Karnaugh Map

Boolean Algebra - Logic Gates – Universal Gates – De Morgan's Theorem – K- Map Simplification 2,3,4, and 5 variables – construction and properties – Canonical Form1 – Implicants – Don't care combinations – Irredundant expression – Minimization in SOP Form using K-map - Minimization in POS Form using K-map - Minimization using Quine – Meclusky (Tabulation Method).

UNIT III Arithmetic Circuits and Combination Networks

Half adder and subtractor – Full adder and subtractor – Parallel adder and subtractor 2's complement adder and subtractor – BCD adder – Binary multiplier and divider – Comparator – Decoder and Encoder – Mutiplexer and Demultiplexer. Read only Memory – Combination Logic Implementation using ROM – Types of ROM's Programmable Logic Array (PLA) – Programmable Array Logic (PAL) – Comparison between PROM, PLA and PAL.

UNIT IV Sequential logic

RS Flip Flop – Clocked RS - SR Flip Flop – Clocked SR – D Flip Flop – T Flip Flop – JK Flip Flop – Triggering of Flip Flops – Flip Flop conversions – Shift Registers – Applications of Shift Registers – Counters – State Table – Flip Flop Excitation Tables – Design Procedure – Modulus N Synchronous counter – Typical IC's for counters – Counter applications.

UNIT V D/A Conversion and A/D Conversion

Variable Resistor Networks – Binary Ladder Network – D/A techniques - D/A accuracy and resolution – A/D Converters – Simultaneous Conversion – Counter Method – Continuous A/D conversion - A/D Techniques – Dual Slope A/D conversion – A/D accuracy and resolution.

Text Books :

- 1. V.K.Puri Digital Electronics Circuits and System Tata McGraw Hill Publishing Company Limited, New Delhi. ISBN 0-07-463317.
- 2. Donald P.Leach and Albert Paul Malvino Digital Principles and Applications Tata McGraw Hill Publishing Company Ltd, New Delhi. ISBN 0-02-801821-4.

Reference Books :

- 1. William H.Gothmann Digital Electronics 2nd Edition Prentice Hall of India Pvt Ltd. ISBN 81-203-0348-2.
- 2. Avinashi Kapoor and Maheswari Digital Electronics Principles and Practice Macmillan India Ltd. SBN 033392659 5.
- 3. Marries Mano Digital Logic circuits Tata McGraw Hill Publishing Company Ltd, New Delhi. ISBN 0-02-801821-4.
- 4. A.P. Godse and D.A. Godse Digital System Technical Publications.

Paper : Core 3 – Analog and Digital Communication SystemHours : 6 Hrs / WeekCode :P08EC103Marks: 100 marks

UNIT I Radio Wave Propagation and Antennas

Electromagnetic Radiation – Fundamentals - Effects – Propagation of waves – Ground waves – Sky wave propagation – Space waves – Tropospheric Scatter propagation – Extraterrestrial Communication.

Antenna – Basic consideration – Wire Radiators in Space – Terms and Definitions – Effects of Ground on Antennas – Directional High Frequency consenters – Microwave Antennas – Wide Band Antennas – Folded Dipole – Helical Antenna.

UNIT II Amplitude Modulation and Frequency Modulation

Amplitude Modulation Theory – Frequency Spectrum of the AM wave – Representation of AM – power relations in the AM wave – Generation of AM – Basic requirements – Grid Modulated Class C amplifier – Modulated Transistor amplifier – System Summary.

Frequency Modulation – Theory of Frequency and Phase Modulation – noise and Frequency Modulation – Generation of Frequency Modulation – System Summary.

UNIT III Pulse Communication

Introduction – Pulse Amplitude Modulation (PAM) – Pulse Code Modulation (PCM) – Pulse Frequency Modulation (PFM) – Pulse Time Modulation (PTM) – Pulse Position Modulation (PPM) – Pulse Width Modulation (PWM).

UNIT IV Digital Communication

Introduction – Synchronization – Asynchronous Transmissions – Probability of Bit Error in Base band Transmission – The Matched Filter – Optimum Terminal Filter – Bit Timing Recovery – Eye Diagrams – Digital Carrier System – Carrier Recovery Circuits – Differential Phase Shifting Key (DPSK) – Error Control Coding.

UNIT V Television Fundamentals

Requirements and Standards – Introduction to Television – Television Systems and Standards – Black and White Transmission Fundamentals – Scanning – Blanking and Synchronizing Pulses – Black and White Reception – Fundamentals – Common Video and Sound Circuits – Vertical deflection circuits – Horizontal deflection circuits – Color Transmission and Reception.

Text Books :

- 1. Dennis Roddy and John Coolen Electronic Communications 4th Edition Prentice Hall of India Private Ltd, New Delhi. ISBN-81-203-0984-7.
- George Kennedy Electronic Communication System 3rd Edition Tata McGraw Hill Publishing Company Ltd, New Delhi. ISBN 0-07-034054-4.

Reference Books :

- Herbert Taub and Donald L. Schilling Principles of Communication Systems 2nd Edition - McGraw Hill Publishing Company Ltd, New Delhi. ISBN 0-07-062955-2.
- Robert J. Schonbeck Electronic Communication Modulation and Transmission -2nd Edition - Prentice Hall of India. ISBN -81-203-1483-2.
- B. P. Lathi Modern Digital and Analog Communication System 3rd Edition, -Oxford University Press. ISBN 0-19-51009-9.
- 4. K. Sam Shanmugam Digital and Analog Communication System John Wiley & Sons. ISBN 9971-51-146-0.

Paper : Elective 1 – IC Fabrication and its ApplicationsHours : 6 Hrs / WeekCode :P08EC1E1Marks: 100 marks

UNIT I Integrated Circuit Fabrication

Introduction – Classification – IC chip size and circuit complexity – Fundamentals of Monolithic IC Technology – Basic Planar Processes – Fabrication of a typical circuit – Active and Passive components of IC's – Fabrication of FET – Thin and Thick film Technology – Technology Trends.

UNIT II Operational Amplifier and Applications

Introduction – Basic information of Operational Amplifiers – The ideal Operational Amplifiers – DC characteristics – AC characteristics – Analysis of Data Sheets of OPAMP.

Basic applications of Operational Amplifiers – Differentiator – Integrator – Instrumentation Amplifier – Log and antilog amplifiers.

UNIT III Comparator and Voltage Regulator

Comparator – Applications – Zero Crossing Detectors – Schmitt Trigger – Square wave generator – Triangular wave generators – Sine wave generators.

Voltage regulator – Fixed output and Adjustable Voltage regulators – Switching regulators.

UNIT IV Active filters and Converters

Active Filters – First order and Second order Low Pass Filters – High Pass Filters – Band Pass Filters – Band Rejection Filters.

Voltage to Frequency and Frequency to Voltage Converters – Analog to Digital and Digital to Analog Converters.

UNIT V Timer and Phase Locked Loop

Introduction to IC555 – IC555 as a Monostable Multivibrator – Applications – IC555 as a Astable Multivibrator – Applications.

Phase Locked Loop (PLL) – operating Principles – Monolithic Phase Locked Loop – IC565 applications.

Text Books :

- 1. D-Roy Choudhury and Shail B. Jaisn Linear Integrated Circuits 2nd Edition New Age International Publishers. ISBN-81-224-1470-2.
- Ramakant A. Gayakwad OpAmps and Linear Integrated Circuits 4th Edition Prentice Hall of India Private Ltd, New Delhi. ISBN-81-203-2058-1.

Reference Books :

- 1. K. R. Botkar Integrated Circuits 4th Edition Kanna Publishers, New Delhi.
- Coughlin and Discoll Operational Amplifiers and Linear Integrated Circuits 3rd edition – PHI 1989.

Paper : Core Practical 1 – Electronics Circuits lab Code : P08EC1P1

Hours : 4 Hrs / Week Marks: 100 marks

Any Ten Experiments

- 1. Construction of Dual Power Supply and Clipper and Clamper Circuits.
- 2. Characteristics of Zener Diode. Construction of Zener Regulated Power Supply.
- 3. Characteristics of Transistor under CE and CB configuration.
- 4. Characteristics of SCR, DIAC and TRIAC.
- 5. Construction of Single stage and Multistage Transistor Amplifier.
- 6. Characteristics of FET and Construction of Common Source FET amplifier.
- 7. Characteristics of UJT and Construction of UJT Relaxation Oscillator.
- 8. Construction of Hartley Oscillator and Colpitt's Oscillator.
- 9. Construction of Phase Shift Oscillator and Wien Bridge Oscillator.
- 10. Construction of Astable, Monostable and Bistable Multivibrators using transistor.
- 11. Construction of Adder, Subtractor, Scale changer and Comparator using IC 741.
- 12. Construction of Integrator, Differentiator and Waveform generation circuits using IC 741.
- 13. Construction of Low pass, High Pass and Band Pass using IC 741.

Paper : Core Practical 2 – Advanced Digital Electronics labHours : 4 Hrs / WeekCode :P08EC1P2Marks: 100 marks

Any Ten Experiments

- 1. NAND and NOR as Universal gates. Verification of Demorgan's Theorem.
- 2. Simplification of Boolean Expressions using Boolean algebra and Karunag Map.
- 3. Construction of Half and Full Adder and Subtractor..
- 4. Binary to Gray and Gray to Binary conversion and 4 bit Binary adder.
- 5. Study of Mutiplexer, Demultiplexer, Encoder and Decoder.
- 6. Study of RS and D, JK, Master Slave and T Flip Flop.
- 7. Construction of Shift Registers.(4 types)
- 8. Construction of Ripple Counter and Ring Counter.
- 9. Construction of BCD and UP/DOWN Counter.
- 10. Construction of Digital to Analog converter.
- 11. Construction of Analog to Digital converter.
- 12. Construction of Astable, Monostable and Bistable Multivibrators using IC 555.
- 13. Construction of Digital clock. (HH:MM:SS)

Paper : Core 4 – Advanced Microprocessor and Interfacing
Code :Hours : 6 Hrs / Week
Marks: 100 marks

UNIT I: Intel 8085

Introduction – Architecture – Memory addressing – Addressing modes – Instruction set – Timing methods – Pins and signals – Instruction Timing and execution – Interrupt system – Simple programs.

UNIT II: Intel 8086

Introduction – Architecture – Addressing modes – Instruction set – Instruction format – Assembler Dependant instructions. Assembler pseudo instructions – Interrupt system – Simple programs.

UNIT III: Intel 80186/80286/8086

Architecture of 80186 and 80286 – 80286 memory management architecture of 80386 – 80386 programming model – memory organization and segmentation – Data types – Registers – Instruction format – Addressing modes – Instruction set – 80386 pins & signals - 80836 modes.

UNIT IV: Motorola MC68000

Introduction – Programming model – Addressing modes – Instruction format – Instruction set – Pins and signals – 68000 DMA.

UNIT V: Peripheral controller and data communication standards

Programmable Peripheral Interface (8255) – Keyboard display Interface (8279) – USART (8251) – EIA RS-232C - Serial interface standard – IEEE 488 – 1978 general purpose Interface bus standard.

- 1) Mohamed Rafiquzzaman Microprocesors & Microcomputer Based System Design Universal book stall, New Delhi.
- 2) John Uffenberk The 8086/8088 family design, programming and Interfacing Prentice Hall of India, Pvt Ltd.. ISBN – 81-203-0933-2

Reference Books :

- 8. Barry B.Brey The Intel Microprocessors Architecture Programming & Interfacing Prentice Hall of India. ISBN 81-203-2158-8.
- Yu-Cheng Li and Glenn A.Gibson Microcomputer System The 8086/8088 family Architecture, Programming & Design - Prentice Hall of India. ISBN 81-203-0409-8.
- 10. Badri Ram Adavneed Microprocessors and Interfacing Tata McGraw Hill Publishing Company Ltd, New Delhi. ISBN 0-07-043448-4.
- 11. A.K.Ray and K.M Bhurchandi Advanced Microprocessor and Peripherals Tata McGraw Hill Publishing Company Ltd, New Delhi. ISBN 0-07-463841-6.
- 12. Douglas.V.Hall Microprocessor and Interfacing 2nd Edition Tata McGraw Hill Publishing Company Ltd, New Delhi. ISBN 0-07-463639-1.

Paper : Core 5 - Data Communication and NetworkingHours : 6 Hrs / WeekCode :P08EC205Marks: 100 marks

UNIT I Data Communication and Network Models

Data Communication – Components - Data representation – Direction of Data flow - Network- The Internet – Protocols and standard – Layered Tasks – Internet modem – OSI model.

UNIT II Physical Layer

Digital Transmission – Line coding – Block coding – Transmission Media – Guided media – Unguided media – Circuit switching and Telephone Networks – DSL Technology – Cable Modem – SONET.

UNIT III Data Link Layer

Error detection and correction – Type of errors – Data Link Control and Protocols – Flow and Error control – Point to Point Protocols – PPP Stack – Multiple Access – Random Access – Controlled access – Canalization.

UNIT IV Network Layer

Jew networks (need for network layer – inter net as a packet – switched network internet as a connection methods) adding internet dataars – classfull adding – classlens adding – dynamic address configuration/ routing. ARP- manning paper formet . – encapsulation – in datagram fray matadd – maximum trayer unit(miu).

UNIT V Transport Layer

Processer to Process delivery – circuit – serer paradigm – adchering –multiplying and demultiplying – correctionnul vesual connect – Oriental server user data gram model (UDP) – port number – User data gram application – Transmission Control Protocol (TCP) – Port Number TCP Service – Number of bytes segment number – Segment connection – Stack transmission diagram – flow control – error control - TCP timers.

Text Books :

3. Behrouz A. Forouzan – Data Communication and Networking – Tata McGraw Hill Publishing Company Ltd, New Delhi. ISBN 0-07-058408-7.

4. Pallapa Venkataram and S.S.Manvi – Communication Protocol Engineering - Prentice Hall of India. 2004.

5. A.S. Tanenbaum – Computer Networks Tata McGraw Hill Publishing Company. **PERIYAR UNIVERSITY SALEM -11**

M.Sc., ELECTRONICS AND COMMUNICATION (For the candidates admitted from the year 2008 – 09 onwards) Course Structure under CBCS pattern

Paper : Elective 2 – Biomedical Instrumentation Engineering
Code :Hours : 6 Hrs / Week
Marks: 100 marks

UNIT I Bioelectric Potential and Cardiovascular System

Resting and Action potential – Propagation of Action potentials – The Bioelectric potentials – The Heart and Cardiovascular system – The Heart – Blood pressure – Characteristics of Blood Flow – Components of the Man – Instrument System.

UNIT II Biomedical Electrodes and Recorders

Recording electrodes – Skin contact impedance – Electrodes for ECG, EEG and EMG – Microelectrodes – Pacemakers – Defibrillators – Recorders – Electrocardiograph – Electroencephalograph and Electromyography.

UNIT III Patient Monitoring System

System Concept – Measurement of Heart rate – Measurement of Temperature – Blood pressure measurement – Measurement of Respiration rate – Computer aided ECG analysis – Computer Catheterisation laboratory – Computerized Patient Monitoring System.

UNIT IV Operation Theatre Equipment

Anesthesia Machine – Blood Flow meters – Gas Analysers – Blood Gas Analysers – X-Ray machine – radiography and Fluoroscopy – Image Intensifiers – Angiography.

UNIT V Advanced Biomedical Instrumentation

Computer in Medicine – Lasers in Medicine – Endoscopes – Computer Tomography – Thermography – Ultrasonic Imaging Systems – Magnetic Resonance Imaging.

- 3. Dr. M.Arumugam Biomedical Instrumentation 2nd Edition Anuradha Agencies Publishers.
- 4. Leslie Cromwell, Fred J.Weibell & Erich A. Pfeifter– Biomedical Instrumentation and Measurements 2nd Edition Pearson Education. ISBN-81-297-0028-X.
- 5. R.S. Khandpur Hand Book of Biomedical Instrumentation TMGH Publishing Ltd, New Delhi. ISBN 0-07-451725-2.

PERIYAR UNIVERSITY SALEM -11 (For the candidates admitted from the year 2008 – 09 onwards) Course Structure under CBCS pattern

EDC Paper -1 Embedded System and Real Time Applications

(This Paper is offered by the Department of Electronics and Communication only for the

Other Department PG Students)

Code : P08EC2ED1

Hours: 4 Hrs / Week Marks: 100 marks

UNIT I 8051 Microcontrollers

Microcontrollers and Embedded Processors – Overview of the 8051 Family – 8051 Architecture – Pin Configuration of 8051 – Instruction Set – Addressing Modes.

UNIT II Assembly Language Programming of 8051

Introduction to 8051 Assembly Language programming – Assembling and Running an 8051 Program – Program Counter and ROM Space on 8051.

UNIT III Software Architecture and RTOS

Round Robin – Function Queue Scheduling Architecture – Real Time Operating System Architecture – Selecting an Architecture Tasks and Task States – Tools and Data – Semaphores and Shared Data.

UNIT IV Basic Design Using a Real-Time Operating System

Overview – Principles – General operation – Short Interrupt routines – Tasks for Priority and Encapsulation – Recommended Task Structure – Creating and Destroying Tasks – Underground tank Monitoring System.

UNIT V Embedded Software Development Tools

Host and Target Machines – Linker/Locators for Embedded Software – Getting Embedded Software into the Target System.

Text Books:

- Muhammad Ali Mazidi, Jarrice Gillispie Mazidi & Rolin D.McKinlay The 8051 Microcontroller and Embedded Systems – 2nd Edition –Prentice Hall India Pv.Ltd. ISBN 81-203-2954-6.
- 2. David E. Simon An Embedded Software Primer Pearson Education. ISBN-81-78083-045-1.

Reference Books:

- Kenneth J.Ayala The Architecture, Programming & Applications 2nd Edition - Pearson International Publishing (I) Pvt.Ltd. ISBN 0-314-20188-2.
- 2. Myke Predko Programming And Customizing The 8051 Microcontroller Tata McGraw Hill Publishing Company Ltd, New Delhi. ISBN 0-07-042140-4.

PERIYAR UNIVERSITY –SALEM-11 (For the candidates admitted from the year 2008 – 09 onwards) Course Structure under CBCS pattern

EDC Paper –2 Cellular Phone Servicing

(This Paper is offered by the Department of Electronics and Communication only for the

Other Department PG Students)

Paper Code: P08EC2ED2

Hours: 4 Hrs /

Week

Max Marks:100

Unit –I

Introduction – History of Wireless Communication – Frequency for Radio Transmission – Signals – Modulation - Wave propagation - Antennas.

Unit-II

Dynamics of Cellular Transmission – Log On –Monitoring – Out going Calls – Incoming Calls – Handoff - Cellular Components – Cell- Base Station – MTSO-Handset- Cellular Coverage and Channels – Routing Cellular calls.

Unit-III

Cellular Systems – GSM System – Bands – CDMA System - GPRS techniques . Bluetooth: Architecture – Radio layer – Baseband layer – Link Manager Protocol – L2CAP.

Unit-IV

Digital Audio broad casting – Digital video broad casting – DVB data broad casting – DVB for High Speed Internet access.

Unit-V

Battery check up – Key Pad Servicing – Display Servicing – Charger Check up – Installation of Games - Internet Activation.

Text Book:

- 1. Regis J Bates Wireless networked Communications TMH
- Jochen Schiller Mobile Communication 2nd Edition Pearson Education Ltd, New Delhi.

Reference Book:

1. William C.Y.Lee – Mobile Cellular Telecommunication - TMH

PERIYAR UNIVERSITY SALEM -11 M.Sc., ELECTRONICS AND COMMUNICATION (For the candidates admitted from the year 2008 – 09 onwards) Course Structure under CBCS pattern

Paper : Core Practical 3 – Analog and Digital Communication Lab

Hours : 4 Hrs / Week Marks: 100 marks

Code : P08EC2P3

Any Ten Experiments

- 14. AM modulation and demodulation.
- 15. FM modulation and demodulation.
- 16. Automatic Gain Control.
- 17. Voltage Control Oscillator.
- 18. Pulse Amplitude Modulation.

- 19. Pulse Width Modulation.
- 20. Pulse Position Modulation.
- 21. Study of Pulse Code Modulation.
- 22. Study of PLL Characteristics.
- 23. Digital Phase Detector.
- TV Receiver IF section Study and Fault finding. 24.
- TV EHT generation Study and Fault finding. Study of Cable TV system. 25.
- 26.

Paper : Core Practical 4 – Advanced Microprocessor and Interfacing lab Hours : 4 Hrs / Week Code : P08EC2P4 Marks: 100 marks

Any Ten Experiments

- 1. 8 bit Addition, Subtraction, Multiplication and Division using 8085µP Kit.
- 2. 16 bit Addition, Subtraction, Multiplication and Division using 8085µP Kit.
- 3. Digital Clock using 8085µP Kit.
- 4. Stepper Motor Interface using 8085µP Kit.
- 5. DC Motor Speed Control using 8085µP Kit.
- 6. Traffic Light Controller Interface using 8085µP Kit.
- 7. Interfacing ADC 0809 with 8085µP Kit.
- 8. DAC Interface with 8085µP Kit and Wave form generations using DAC.
- 9. Serial Port Interface using RS232C with 8085µP Kit.
- 10. ON and OFF relay control using 8085 interrupts.
- 11. Addition of two 16 bit numbers and Double Precision Addition using 8086µP Kit.
- 12. Subtraction of two 16 bit numbers and Double Precision Subtraction using 8086µP Kit.
- 13. 16 bit Multiplication and 32 bit division using 8086µP Kit.

Paper : Core 6 - C++ and Java ProgrammingHours : 6 Hrs / WeekCode :P08EC306Marks: 100 marks

UNIT I Fundamentals of Object Oriented Programming

Introduction – Object Oriented Paradigm – Basic Concepts of Object Oriented Programming – Benefits of OOPs – Application of OOPs.

UNIT II Programming with C₊₊

Data Types – Operators and Statements – Control statements – Function and Program Structures – Arrays – Pointers.

UNIT III Applications of C₊₊

Structures – Unions – Bit fields – Classes and Objects – Inheritance – Overloading – Polymorphism – Templates and Exception Handiling.

UNIT IV Programming with Java

Difference between Java and C & C_{++} – Java and Internet – Java and World Wide Web – Web Browser – Hardware and Software Requirements – Java Environment - Constants, Variables and Data Types, Operators and Expressions – Branching and Looping.

UNIT V Applications of Java

Classes, Objects and Methods – Arrays – Strings and Vectors – Multiple Inheritance – Multithreaded programming – Exception Handling – Applets.

- 6. D.Ravichandran Programming with C₊₊ Tata McGraw Hill Publishing Company Ltd, New Delhi. ISBN-0-07-463349-x.
- 7. E.Balagurusamy Programming with Java Tata McGraw Hill Publishing Company Ltd, New Delhi. ISBN 0-07-463542-5.

Paper : Core 7 – Optical Fiber CommunicationHours : 6 Hrs / WeekCode :P08EC307Marks: 100 marks

UNIT I Optical Fiber Communication

Basic Network Information Rates – Elements of an optical Fiber Transmission Link – Basic Optical Laws and Definitions – Optical Fiber methods and Configuration Mode theory for circular wave guides – single mode Fibers – Graded Index – Step Index – Fiber Materials – Fiber fabrication – Mechanical properties.

UNIT II Optical Sources, Power Launching & Coupling

LED – Laser Diodes – Light Source Linearity – Sources to Fiber Power Launching – Lensing Schemes – LED coupling to Single Mode Fibers – Fiber Splicing – Optical Fiber Connectors.

UNIT III Optical Receiver Operation & Amplifiers

Fundamental Receiver Operation – Digital Receiver Performance – Pre Amplifier Types – Analog Receivers – Basic Applications and Types of Optical Amplifiers – Semiconductors Optical Amplifier.

UNIT IV WDM Concepts and Components

Operational Principles of WDM – Passive Components – Tunable Sources – Tunable Filters – Wavelength Converters.

UNIT V Optical Network

Basic Network – SONET/SDH – Broadcast and Selection of WDM networks -Wavelength – Routed networks – Performance of WDM + EDFA System – Optical CDMA.

- 1. Gerd Keiser Optical Fiber Communications 3rd Edition Mc Graw Hill International Edition. ISBN-0-07-232101-6.
- 2. J.H.Franz and V.K.Jain Optical Communication Components and Systems Narosa Publication House. ISBN 81-7319-145-x.

PERIYAR UNIVERSITY SALEM -11

M.Sc., ELECTRONICS AND COMMUNICATION (For the candidates admitted from the year 2008 – 09 onwards) Course Structure under CBCS pattern

Paper : Core 8 – Embedded System Code : P08EC308

Hours : 6 Hrs / Week Marks: 100 marks

UNIT I 8051 Microcontrollers

Microcontrollers and Embedded Processors – Overview of the 8051 Family – 8051 Architecture – Pin Configuration of 8051 – Instruction Set – Addressing Modes. 8051 Assembly Language programming – Assembling and Running an 8051 Program – Program Counter and ROM Space on 8051 – Data Types and Directives – 8051 Flag Bits and the PSW Register – Register Banks and Stack – Timer and Counter – Interrupts.

UNIT II PIC Microcontrollers

Hardward Architecture and Pipelining – Program Memory – Register Pile Structure and Addressing Modes – CPU registers – Instruction Set – Simple Programs. MPASM Assembler and its use.

UNIT III Timer & Interrupts

Timer 2 use – Interrupt Logic – Timer 2 Sealer Initialization – Interrupt Service Routine – Loop Time Subroutine – Code Template – Interrupt Constrains – Improved Interrupt Servicing – External Interrupts and Timers – Timer 0 – Compare Mode – Capture Mode.

UNIT IV I/O Port Expansion and Peripheral Interfacing

Synchronous Serial Port module – Serial Peripheral Interface – Output Port and Input Port expansion – DAC Output – Temperature Sensor – Serial EEPROM.

UNIT V A/D Converter and UART

ADC Characteristics – ADC use Waveform & Baud Rate Accuracy – Baud Rate Selection – UART Data Handling Circuitry – UART Initialization – UART use.

- Muhammad Ali Mazidi, Jarrice Gillispie Mazidi & Rolin D.McKinlay The 8051 Microcontroller and Embedded Systems – 2nd Edition –Prentice Hall India Pv.Ltd. ISBN 81-203-2954-6.
- 2. John Pickman Microcontroller Based Embedded System Pearson Education.

3. MPASM online Help Files.

Reference Books :

- 1. Kenneth J.Ayala The Architecture, Programming & Applications 2nd Edition - Pearson International Publishing (I) Pvt.Ltd. ISBN 0-314-20188-2.
- 2. Myke Predko Programming And Customizing The 8051 Microcontroller Tata McGraw Hill Publishing Company Ltd, New Delhi. ISBN 0-07-042140-4.

PERIYAR UNIVERSITY SALEM -11

M.Sc., ELECTRONICS AND COMMUNICATION (For the candidates admitted from the year 2008 – 09 onwards) Course Structure under CBCS pattern

Paper : Elective 3 – VLSI Techniques Code : P08EC3E3

Hours : 6 Hrs / Week Marks: 100 marks

UNIT I Design Process

Introduction – Size and Complexity of Integrated circuits – The microelectronics field – IC design process – Trends in VLSI design – IC production process – Processing Steps – Packaging band Testing – Semiconductor Process – MOS Processes – Bipolar Technology – Hybrid Technology – Design Rules and Process parameters – Layout Techniques.

UNIT II Devise Modeling

Modeling – MOS Models Diode Models – DC Diode Model – Small Signal Diode Model – High frequency Diode Model – Bipolar Model – DC BJT Model – Small Signal BJT Model – High frequency BJT Model – Measurement of BJT Model parameters – Passive components Model – Monolithic Capacitors – Monolithic Resistors.

UNIT III Circuit Simulation

Circuit Simulation using SPICE – MOSFET Model – Level 1 Large Signal Model – Level 2 Large Signal Model – High frequency Model – Noise Model of the MOSFET – Temperature dependence of the MOSFET – Diode Model – Large Signal Diode current – High frequency Diode Model – BJT Model – Large Signal BJT Model – High frequency BJT Model – BJT Noise Model – Temperature dependence of the BJT.

UNIT IV Digital Circuit

Design Abstraction – Characteristics of Digital circuits – Single Channel MOS Inverters – NMOS – NOR and NAND Logic circuits – Complementary MOS Inverters – CMOS Logic gates – Transmission gate – Signal propagation delay – Capacitive Loading consideration – Power dissipation – Noise in Digital Logic circuits.

UNIT V Analog Systems

Analog Signal Processing – Digital to Analog converters – Analog to Digital converters – Continuous time filters – Switched capacitor filters – Analog Signal processing circuits.

Text Books :

- 1. S.M Sze VLSI Technology 2nd Edition McGraw Hill Book Company. ISBN -0-07-100347-9.
- Neil H.E.Weste and Kamrun Eshraghian Principles of CMOS VLSI Design 2nd Edition - Pearson Education. ISBN 81-7808-222-5.

Reference Books :

- Wayne Wolf Modern VLSI Design 2nd Edition Prentice Hall PTR. ISBN 0-13-989690 -2.
- 4. Sorab K.Ghandhi VLSI Fabrication Principles 2nd Edition John Wiley & Sons, INC. ISBN -9841-12-694-2.
- Randall L.Geiger, Phillip E.Allen and Noel R.Strades VLSI design Techniques for Analog and Digital Circuits – McGraw Hill Publishing Company. ISBN 0-07-100728-8.

PERIYAR UNIVERSITY SALEM -11

M.Sc., ELECTRONICS AND COMMUNICATION (For the candidates admitted from the year 2008 – 09 onwards) Course Structure under CBCS pattern

Paper : Core Practical 5 – C++ and Java Programming Lab

Hours : 4 Hrs / Week Marks: 100 marks

Code : P08EC3P5

Any Ten Experiments

- 27. Classes and Objects.
- 28. Inline Functions and Friend Functions.
- 29. Functions with Default Arguments and Virtual Functions.
- 30. Empty Constructors and Copy Constructors.
- 31. Parameterized Constructors and Constructors with Default Arguments.
- 32. Function Overloading and Operator Overloading.
- 33. Single and Multiple Inheritance.
- 34. Multilevel and Hybrid Inheritance.
- 35. Managing Input and Output Files.
- 36. Function and Class Templates.
- 37. Exception Handling.
- 38. Multi threaded programming.
- 39. Applets Programming.

Paper : Core Practical 6 – Embedded System lab Code : P08EC3P6 Hours : 4 Hrs / Week Marks: 100 marks

Any 10 Experiments

Using 8051 Microcontroller

- 1. Addition, Subtraction, Multiplication and Division of Two 8 bit numbers.
- 2. Addition, Subtraction, Multiplication and Division of Two 16 bit numbers.
- 3. Finding the square of a given number and the Factorial of a given number.
- 4. ADC Interface.
- 5. DAC Interface.
- 6. Traffic Light Interface.
- 7. Stepper Motor Interface.
- 8. DC Motor Control Interface.

Using PIC Microcontroller

- 9. ADC Interface.
- 10. Ripple Counter.
- 11. I²C Interface.
- 12. PWM Generation.
- 13. 4 X 4 Matrix Keypad Interface

Paper : Core 9 -	Digital Signal Processing	Hours : 6 Hrs / Week
Code :	P08EC409	Marks: 100 marks

UNIT I Signals and Time Invariant Systems

Classification of Signals – Singularity function – Amplitude modulation and Space Spectra – Classification of Systems – Fourier Transforms – Properties of Fourier Transform – Fourier Transform for Power and Energy signals – Properties of a DSP systems – Difference equation and its relationship with the system functions, impulse response and frequency response.

UNIT II Discrete and Fast Fourier Transforms

Discrete Convolution – DFT – FFT – Composite radix FFT – Fast Convolution – Correlation – Z Transform Definition – Properties – Evaluation of inverse Z Transform.

UNIT III FIR and IIR Filters

Magnitude and Phase response of digital filter – frequency response of linear phase FIR filters – Design Techniques for FIR filters – IIR Filter Design by approximation of derivatives and impulse variant method – Butter worth and Chebyswev Filter – Elliptic Filter – Frequency Transformation.

UNIT IV Architecture of TMSS20C5X

Introduction – Bus Structure CALU – ARAU – INDX – ARCR – BMAR – Block repeat registers – PLU Program controller – On-chip memory and peripheral -TMSS20C5X Assembly language syntax – Addressing modes – Instructions Set.

UNIT V Programming in C5X and MATLAB

Programming for Familiarization of the Addressing modes - Programming for Familiarization of the Instructions – Representation of Basic signals – Discrete Convolution – Circular Convolution – Discrete Correlation Stability test – FFT – Butter worth Analog and Digital Filters.

Text Books :

- 1. B.Venkataramani & M.Baskar Digital Signal Processors Architecture, programming and Applications Tata MC Graw Hill Publishing Company Ltd, New Delhi. ISBN -0-07-47334-X.
- 2. MATLAB Manual

Reference Books :

- **3.** S.Salivaganan, A.Valavaraja & C.Ganapriya Digital Signal Processing Tata MC Graw Hill Publishing Company Ltd, New Delhi. ISBN -0-07-463996-X.
- **4.** Snajit K.Mitra Digital Signal processing A Computer based Approach Tata MC Graw Hill Publishing Company Ltd, New Delhi. ISBN -0-07-463723-1.

PERIYAR UNIVERSITY SALEM -11

M.Sc., ELECTRONICS AND COMMUNICATION (For the candidates admitted from the year 2008 – 09 onwards) Course Structure under CBCS pattern

Paper : Core 10 - Power ElectronicsHours : 6 Hrs / WeekCode :P08EC410Marks: 100 marks

UNIT I Thyristors and Controlled Rectifiers

Thyristor characteristics – Two transistor model of thyristor – Thyristor type – series operation & parallel operation of thyristors - Thyristors firing circuits.

Principle of phase controlled converter operation single phase semiconvertors-Single phase converters single phase dual conversion – Single phase series converters. Three phase half wave converters.

UNIT II AC Voltage Controller

Principle of on-off control – Principle of phase control- Single phase bidirectional controllers with resister loads – Single phase controller with inductor loads – Three phase half wave controller – Three phase full wave controllers – Cycloconverters.

UNIT III Thyristor Commutation Techniques and Power Transistor

Natural commutation – Forced commutation - Self commutation – Impulse commutation - Resonant pulse commutation - Complimentary commutation - External pulse commutation – Load side commutation – Line side commutation.

Power transistor – Power MOSFET- Steady State characteristics and Switching characteristics – SITS –IGBTs.

UNIT IV DC Choppers And Static Switches

Dc choppers – Introduction – Principle of step – down operation – Principle of step –up operation- switching mode regulators- Thyristors chopper circuits.

Static switches – Single phase AC switcher- three phase AC switching - Three phase reversing switches. Solid state relays.

UNIT V DC Drivers and AC Drivers

Basic characteristic of DC motor – operating modes- single phase half wave conversion driver- single phase semiconductor drivers – single phase full converter - – single phase dual converter drivers, three phase half wave converter drivers.

Induction motor drivers – Performance characteristics- Stator voltage control – rotor voltage controller- rotor voltage control - Frequency control- voltage and frequency

controller – current control- voltage, current and frequency control – Closed loop control of inductors motors.

Text books:

- Muhammad H. Rashid Power Electronics Circuits, Devices, and Applications -2nd edition – Prentice Hall of India Private Ltd, New Delhi. ISBN - -81-203-06869-7.
- 2. MD. Singh and K.B. Khanchandani Power Electronic Tata MC Graw Hill Publishing Company Ltd, New Delhi. ISBN -0-07-463369-4.

Reference Books :

- 1. PC Sen Power Electronic Tata MC Graw Hill Publishing Company Ltd, New Delhi. ISBN -0-07-462400-8.
- 2. G.K DUBEY, SR DORADLA, A JOSHI & RMK SINHA- Thysiorised Power Controllers – New Age International Publishers. ISBN -0 85226 190 X.

PERIYAR UNIVERSITY SALEM -11

M.Sc., ELECTRONICS AND COMMUNICATION (For the candidates admitted from the year 2008 – 09 onwards) Course Structure under CBCS pattern

Paper : Elective 4 – Mobile Communication Code : P08EC4E4

Hours : 6 Hrs / Week Marks: 100 marks

UNIT I Wireless Transmission

Frequency for Radio transmission – Signals – Antennas – Signal propagation – Multiplexing – Space Division Multiplexing – Frequency Division Multiplexing – Time Division Multiplexing – Code Division Multiplexing.

UNIT II Medium Access Control and Telecommunication Systems

Space Division Multiple Access – Frequency Division Multiple Access – Time Division Multiple Access – Code Division Multiple Access – Comparison of SDMA, FDMA, TDMA and CDMA. GSM – Mobile Services – System architecture – Radio interface – Protocols – Localization and calling – Handover – Security – New Data services.

UNIT III Satellite and Broadcast Systems

Satellite Systems – ApplicationsBasics GEO 193, LEO 194, MEO 195 – Routing – Localization – Handovers – Broadcast System – Cyclical repetition of data – Digital Audio and Video Broadcasting – Convergence of broadcasting and Mobile Communication.

UNIT IV Mobile Network layer and Transport Layer

Mobile IP – Entities and Terminology – IP Packet Delivering – Dynamic Host Configuration Protocol – Mobile ad-hoc Networks – Mobile Transport Layer – Traditional TCP – Classical TCP Improvements – TCP over 2.5/3G Wireless Network.

UNIT V Intelligent Networks for Wireless Transmission

Advanced Intelligent Network (AIN) – SS7 Network and ISDN for AIN – Asynchronous Transfer Mode (ATM) – Future Public Land Mobile Telecommunication System (FPLMTS) – Wireless Information Superhighway.

Text Books:

8. Jochen Schiller – Mobile Communication – 2nd Edition – Pearson Education Ltd, New Delhi. ISBN-81-7758-263-1. William C.Y.Lee – Mobile Cellular Telecommunication - Tata McGraw Hill Publishing Company Ltd. ISBN 0-07-063599-4.
PERIYAR UNIVERSITY SALEM -11

M.Sc., ELECTRONICS AND COMMUNICATION (For the candidates admitted from the year 2008 – 09 onwards) Course Structure under CBCS pattern

Paper : Core Practical 7 – Digital Signal Processing Lab

Code : P08EC4P7

Hours : 4 Hrs / Week Marks: 100 marks

Any Ten Experiments

- 40. Study of Basic Programs: Addition and Multiplication.
- 41. Study of Special Instructions.
- 42. Study of I/O Peripherals: ADC and DAC Initialization.
- 43. Sine, Square, Triangle and Saw tooth Waveform generation.
- 44. Sampling Theorem.
- 45. Stability Test.
- 46. Convolution of two discrete signals.
- 47. Correlation of two discrete signals.
- 48. Fast Fourier Transform
- 49. Low pass and High pass Butter worth Analog Filters.
- 50. Low pass and High pass Butter worth Digital Filters.
- 51. Low pass and High pass Chebyshev Type-1 Analog Filters.
- 52. Low pass and High pass Chebyshev Type-1 Digital Filters.
- 53. FIR Filter design using window technique.

Paper : Core Practical 8 – Power Electronics lab Code : P08EC3P6 Hours : 4 Hrs / Week Marks: 100 marks

Any 10 Experiments

- 14. Firing Characteristics of SCR and TRIAC
- 15. Half wave gate controlled rectifier using one SCR.
- 16. Single Phase Half controlled full wave rectifier using two SCR's and two Diodes.
- 17. Switching regulators.
- 18. Forced Commutation.
- 19. Single Phase inverter.
- 20. Zero voltage switches.
- 21. Illumination control using SCR & TRIAC.
- 22. Speed control of single phase induction motor using thyristors.
- 23. Speed control of DC motor using thyristors.
- 24. LDR application in a Light Activated Turn-OFF circuit.
- 25. Speed Torque characteristics of a DC motor.
- 26. Study of a three phase rectifier using Power diodes.
- 27. Stepper motor motion control.