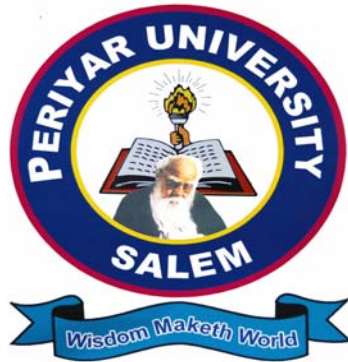


**PERIYAR UNIVERSITY
PERIYAR PALKALAI NAGAR
SALEM – 636 011**



DEGREE OF MASTER OF SCIENCE

CHOICE BASED CREDIT SYSTEM

SYLLABUS FOR M.SC. ELECTRONICS & COMMUNICATION

**FOR THE STUDENTS ADMITTED FROM THE
ACADEMIC YEAR 2012 – 2013 ONWARDS**

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 there to, subject to such condition as may be prescribed therefore shall be permitted to appear and qualify for the M.Sc Electronics and Communication 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 examiner jointly

5. SCHEME OF EXAMINATIONS

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

SEM	Paper Code	Course	Hrs		Credit	Marks		
			Lecture	Tutorial		CIA	EA	TOTAL
I	12PEL01	Core1: Applied Electronics	4	2	5	25	75	100
	12PEL02	Core2: Network and Java Programming	4	2	5	25	75	100
	12PEL03	Core3: Power Electronics	4	2	5	25	75	100
	12PELZ01	Elective1: IC'S Fabrication and its Application	2	4	4	25	75	100
	12PELP01	Core Practical 1: Applied Electronics and Digital Electronics Lab	1	2	2	40	60	100
	12PELP02	Core Practical 2: Power Electronics Lab	1	2	2	40	60	100
II	12PEL04	Core4: Advances Microprocessor and Interfacing	4	2	5	25	75	100
	12PEL05	Core5: Analog and Digital Communication System	4	2	5	25	75	100
	12PELZ02	Elective2: Bio medical Instrumentation	2	4	4	25	75	100
	12PELP03	Core Practical 3: Advances Microprocessor and Interfacing Lab	1	2	2	40	60	100
	12PELP04	Core Practical 4: Analog and Digital Communication Lab	1	2	2	40	60	100
		EDC	4	0	4	25	75	100
	12PHR01	Human Rights	2	0	2	25	75	100
III	12PEL06	Core6: Digital Signal Processing	4	2	5	25	75	100
	12PEL07	Core7: Optical Fiber Communication	4	2	5	25	75	100
	12PEL08	Core8: Embedded System	4	2	5	25	75	100
	12PELZ03	Elective3: VLSI Design and VHDL Programming	2	4	4	25	75	100
	12PELP05	Core Practical 5: Embedded System Lab	1	2	2	40	60	100
	12PELP06	Core Practical 6: Digital Signal Processing Lab	1	2	2	40	60	100
IV	12PEL09	Core9: Thin film and Nano Technology	4	2	5	25	75	100
	12PEL10	Core10: Industrial Automation	4	2	5	25	75	100
	12PELZ04	Elective4: Modern Communication System	2	4	4	25	75	100
	12PELP07	Core Practical 7: Programmable Logic Control Lab	1	2	2	40	60	100
	12PELPR01	Core Project	2	4	4	40	60	100
					90		2400	

6. QUESTION PAPER PATTERN:

For theory:

External:

Time: 3 Hours

Max. Marks – 75

PART – A: 5 x 5 = 25

(Answer all questions)

(Two questions from each unit with internal choice)

PART – B : 5 x 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

CONTENTS

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

Format of the title page:

TITLE OF THE DISSERTATION

Dissertation submitted in part fulfillment of the requirement for the degree Master of Science / Master of Arts
in _____

to the Periyar University.salem-636 011

By

Student Name :

Register Number :

College/University Department

Year

Format of the certificate:

CERTIFICATE

This to certify that the dissertation entitled.....Submitted in part fulfillment of the requirement degree of Master Of Science / Master Of Arts in..... to Periyar University, Salem is a record of bonafide research work carried out by.....under my supervision and guidance and that no part of the dissertation has been submitted for the award of any degree, diploma, fellowship or other similar titles or prizes and that the work has not been published in part or full in any scientific or popular journals or magazines.

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 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 first instance and within a period of two academic years from the year 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 2012-13, i.e., for students who are to be admitted to the first year of the course during the academic year 2012-13 and thereafter.

12. TRANSITORY PROVISION

Candidates who were admitted to the PG course of study before 2012-2013 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 2015. Thereafter, there 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.

SEMESTER-I
CORE-1: APPLIED ELECTRONICS

Paper Code: 12PEL01

Hour: 6/Week
Credits :5

Unit –I Diode and FET

Introduction to Semiconductor – N Type and P Type –PN Junction diode – SCHOTTKY Diode – ZENER Diode – Tunnel Diode– Photodiodes – Applications Half Wave and Full Wave Rectifiers Voltage Regulation-LED and its application- Bipolar Junction Transistors Construction and Operation – Transistor Biasing — Breakdown in Transistors – Field Effect Transistor – Constructions – Operations – Application of JFET – MOSFET Enhancement and Depletion.

UNIT – II Amplifiers

Classification of Amplifiers – Single Stage Amplifiers (CE, CB, & CC) -Class A, Class B, Class C, Push Pull, Complementary Symmetry Push Pull Amplifier – Multistage Amplifier
Oscillators-Classification of Oscillators - Hartley Oscillator – COLPITTS Oscillator –WIEN Bridge Oscillator – Phase Shift Oscillator– Multivibrators – Astable, Monostable and Bistable – Schmitt Trigger

UNIT III Number Systems and Boolean algebra

Decimal System, Binary Systems, Octal Systems, Hexadecimal number systems –Conversions 1's complement – 2's complement addition and subtraction. Binary coded decimal numbers (BCD) – Excess 3 code – Gray code –Code Conversions-Boolean algebra - Logic Gates – Universal Gates – De Morgan's Theorem –K- Map Simplification 2, 3, 4, and 5 variables –Quine – Meclusky (Tabulation Method).

UNIT IV Arithmetic Circuits and Sequential logic

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 – Multiplexer and Demultiplexer.
Sequential logic-RS Flip Flop – Clocked RS - SR Flip Flop – Clocked SR – D Flip Flop – T Flip Flop – JK Flip Flop -Shift Registers –Applications of Shift Registers

UNIT V Counters ,D/A and A/D Conversion

Counters –Ripple Counter-Up down Counter-Variable Resistor Networks – Binary Ladder Network – D/A techniques -Accuracy and resolution – A/D Converters – Simultaneous Conversion – Counter Method– Continuous A/D conversion - A/D Techniques- A/D Accuracy and Resolution.

Text books:

1. Applied Electronics –R.S.SEDHA
2. Electronic Device and Circuits-“TATA MCGRAW HILLS” BY S.SALIVAHANAN N.SURESH KUMAR
3. V.K.Puri – Digital Electronics Circuits and System – Tata McGraw Hill Publishing Company Limited, New Delhi. ISBN 0-07-463317.
4. 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 BOOK

1. “Electronic devices Application and Integrated CIRUITS “UMESH PUBLICATION’ by MATHUR, KULSHRESHTHA, CHADHA.

CORE-2 NETWORK AND JAVA PROGRAMMING

Paper Code: 12PEL02

HOUR: 6/Week

Credits :5

UNIT I

Trends in computer communications and networks- Messages, characters, bit streams, symbols and waveforms-Digital/analog, serial/parallel, simplex/half duplex/full duplex – Synchronous/asynchronous-MODEM: Modulation and keying alternatives – Multiplexing alternatives.

UNIT II LAYER AND THEIR FUNCTIONS

OSI Model –Physical Layer –Data Layer –Network Layer –Transport Session and Application Layer. MODEM: Modulation Techniques –Multilevel Transmission –Advance in Modem. SWITCHING: Circuit Switching –Message Switching –Compressing.

UNIT III NETWORK HARDWARE LAN

LAN Definition –Major Components of LAN –Protocols –IEEE Standards –CSMA/ CD –Token Ring –Token Bus –FDDI –Logical Link Control.

UNIT IV

JAVA Evolution: History – Features – How Java differs from C and C++ - Java and Internet- Simple Java program- Constants- variables – Data types – Operators and Expressions .Decision Making and Branching: If, If. Else, else. If ladder, Switch, operator Decision Making and Looping: While, do, for – jumps in loops-labeled loops. Classes, Objects and Methods.

UNIT V

Arrays, Strings- Interfaces: Multiple Inheritances-Packages: Putting classes together – Multi Threaded Programming- Applet programming. Files: Introduction – concept of streams – Stream classes – Using streams – I/O classes- File class – I/O Exceptions – creation of files- Reading/Writing characters /Bytes

TEXT BOOKS:

1. Data communication and networking –BEHROUZ A FOROUZAN. (2ND EDITION).
2. Programming with java (2nd edition).-E.BALAGURUSAMY.

REFERENCE BOOKS:

1. Computer networks-ANDREW S.TANENBAUM.
2. High speed networking and internets-William Stallings.
3. Java how to program (5th edition) H.M.DEITEL, P.J.DEITEL.

CORE -3: POWER ELECTRONICS

Paper Code: 12PEL03

HOUR: 6/Week

Credits :5

UNIT – I Thyristors and Controller Rectifiers

Thyristors – Construction, Operation Characteristics and Applications of SCR, LASCR, TRIAC, DIAC and UJT – THYRSITOR Rating – Rectifier Circuits using SCR. Two Transistors Model of Thyristors Thyristors Firing Circuits Principle of Phase Controlled Converter Operation Single Phase Semi converters – Single Phase Converters Single Phase Dual Converters – 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 – Cyclo converters.

UNIT – III Thyristors Communication Techniques

Natural Commutation – Forced Commutation – Self Commutation – Impulse Commutation – Resonant Pulse Commutation – Complimentary Commutation – External Pulse Commutation – Resonant Pulse Commutation – Complimentary Commutation – External Pulse Commutation – Load Side Commutation – Line Side Commutation

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 Mode Regulators – Single Phase AC Switcher – Three Phase AC Switching – Three Phase Reversing Switches. Solid State Relays.

UNIT – V DC Drives 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:

1. 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.

ELECTIVE 1: IC FABRICATION AND ITS APPLICATIONS

Paper Code: 12PELZ01

HOUR: 6/Week

Credits :4

UNIT – I

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 Trends.

UNIT - II

Introduction-Basic Information of Operational Amplifiers-the Ideal Operational Amplifiers - DC Characteristics - AC Characteristics - Analysis of Data Sheets of Op-amp. Basic Application of Operational Amplifiers - Differentiator-Integrator -Instrumentation Amplifier - Log and Antilog Amplifiers.

UNIT – III

Comparators – 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 - First Order and Second Order Low Pass Filter - High Pass Filter-Band Pass Filter-Band Rejection Filters. Voltage to Frequency and Frequency Converters –Analog to Digital and Digital to Analog Converters

UNIT - V

Introduction to IC 555 - IC555 as a Monostable Multivibrator – Applications - IC55 as Astable Multivibrator - Applications. Phase Locked Loop (PLL) - Operating Principles - Monolithic Phase Locked Loop - IC555 Applications.

Text Books:

1. D-Roy Choudhury and Shail B. Jain – Linear Integrated Circuits – 2nd Edition –New Age International Publishers. ISBN-81-224-1470-2.
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.
2. Coughlin and Discoll – Operational Amplifiers and Linear Integrated Circuits –3rd edition – PHI 1989.

CORE PRACTICAL 1 – APPLIED ELECTRONICS AND DIGITAL ELECTRONICS LAB

Paper Code: 12PELP01

HOUR: 3/Week

Credits :2

Any Ten Experiments

1. Construction of Dual Power Supply, Construction of ZENER Regulated Power Supply.
2. Characteristics of Transistor under CE and CB Configuration.
3. Characteristic of SCR, /Characteristics of DIAC and TRIAC.
4. Characteristics of UJT and Construction of UJT Relaxation Oscillator.
5. Construction of Hartley Oscillator. Construction / Phase Shift Oscillator
6. Construction of astable, monostable and bistable multivibrators using transistor.
7. Construction of digital to analog converter.
8. Full adder and full subtractor
9. Study of multiplexer, de multiplexer,
10. Encoder and decoder.
11. Study of RS and d, JK, master slave and T flip flop.
12. Construction of shift registers
13. Construction of BCD and up/down counter.

CORE PRACTICAL-II – POWER ELECTRONICS LAB

Paper Code: 12PELP02

HOUR: 3/Week

Credits: 2

Any 10 Experiments

1. Firing Characteristics of SCR and TRIAC.
2. Half Wave Gate Controlled Rectifier using one SCR.
3. Single Phase Half Controlled Full Wave Rectifier Using Two SCR'S and Two Diodes.
4. Switching Regulators.
5. Forced Commutation.
6. Single Phase Inverter.
7. Zero Voltage Switches.
8. Illumination Control using SCR & TRIAC.
9. Speed Control of Single Phase Induction Motor using Thyristors.
10. Speed Control of DC Motor using Thyristors.
11. LDR Application in a Light Activated Turn-OFF Circuit.
12. Speed Torque Characteristics of A DC Motor.
13. Stepper Motor Motion Control.

SEMESTER II

CORE-4 ADVANCED MICROPROCESSORS AND INTERFACING

Paper Code: 12PEL04

HOUR: 6/Week

Credits: 5

UNIT-I: INTEL 8085 ARCHITECTURE AND INSTRUCTION SET

Introduction to INTEL8085 - Register structure- Pin details and functions - Instruction cycle – Timing diagram - Instruction set - Addressing modes - Status flags - data transfer group – Arithmetic group – Logical group – Branch – Stack, I/O and machine control group

UNIT-II: MEMORY AND I/O INTERFACING TECHNIQUES

Address space partitioning – Memory and I/O interfacing – DMA controller 8257-Data transfer schemes – Interrupts of INTEL 8085 – interfacing and programming 8255 – 8259 programming and interfacing- 8251 programming and interfacing – 8253 programming and interfacing - programmable interval timer interfacing- 8279 keyboard interfacing.

UNIT-III: INTEL 8086 ARCHITECTURE & DATA TRANSFER INSTRUCTION

Introduction to 8086 microprocessor - internal architecture – execution unit – General purpose registers – instruction pointers – addressing modes – instruction set – constructing the machine codes for 8086 instructions – segment registers - Memory segmentation

UNIT-IV: 8086 ASSEMBLY LANGUAGE PROGRAMMING MINIMUM AND MAXIMUM MODE

Simple programs – finding average of two numbers – conditional and unconditional jump instructions – conditional flags – time ,delay loops – timing diagram – minimum mode – addressing memory and I/O ports – addressing and address decoding – maximum mode.

UNIT-V: ADVANCED MICROPROCESSORS

Introduction to 80386 – Pentium processors – APIC – MMX – SMM – P6 family of processors – SSE2 – SSE3 – HT technology – Pentium M processors – RISC machine – Parallel processing - Introduction to Multicore – Dual core – Core duo processor technology.

TEXT BOOKS

1. B. Ram, “Fundamentals of Microprocessors and Microcomputers”, Fourth edition, Dhanpat Rai & Sons
2. Douglas V. Hall, “Microprocessors and Interfacing Programming and Hardware”, Second Edition, Tata McGraw- Hill.

BOOKS FOR REFERENCE

1. K.R. Venugopal Rajkumar, “Microprocessor X86 Programming”, New Delhi, BPB Publications, 2005.
2. M. Rafiqzaman, “Microprocessors, Theory and Applications”, Intel and Motorola (Revised edition), Prentice Hall India.

CORE-5: ANALOG AND DIGITAL COMMUNICATION SYSTEM

Paper Code: 12PEL05

HOUR: 6/Week

Credits: 5

UNIT - I Radio Wave Propagation Antennas

Electronic Radiation – Fundamentals – Effects - Propagation of Waves - Ground Waves - Sky Waves Propagation - Space Waves - Tropospheric Scatter Propagation - Extraterrestrial Communication.

Antenna - Basic Consideration - Wire Radiators In Space - Term and Definitions -Effects of Ground on Antennas - Directional High Frequency Antennas - Microwave Antennas - Wide Band Antennas - Folded Dipole - Helical Antenna.

UNIT - II

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 Amplifiers - Modulated Transistor Amplifier - System Summary.

Frequency Modulation - Theory of Frequency and Phase Modulation - Noise and Frequency Modulation - Generation of Frequency Modulation - System Summary.

UNIT – II I

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

Introduction - Synchronization - Asynchronous Transmission - 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

Requirements and Standards - Introduction to Television -Television System and Standards - Black and White Transmission – Scanning - Blanking and Synchronizing Pulse - Black and White Reception – Fundamentals - Common Video and Sound Circuits - Vertical Deflection Circuits - Horizontal 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.
2. George Kennedy – Electronic Communication System – 3rd Edition - Tat McGraw Hill Publishing Company Ltd, New Delhi. ISBN 0-07-034054-4.

Reference Books:

1. Herbert Taub and Donald L. Schilling – Principles of Communication Systems –2nd Edition - McGraw Hill Publishing Company Ltd, New Delhi.ISBN 0-07-062955-2.
2. Robert J. Schonbeck – Electronic Communication Modulation and Transmission -2nd Edition - Prentice Hall of India. ISBN -81-203-1483-2.
3. 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.

ELECTIVE –II: BIOMEDICAL INSTRUMENTATION

Paper Code: 12PELZ02

HOUR: 6/Week

Credits: 4

UNIT - I: ELECTRODES & TRANSDUCERS

Resting and action potential –components of man -Origin of bioelectric signals – recording electrodes – skin contact impedance – electrodes for ECG – electrodes for EEG –electrodes for EMG – electrical conductivity of electrode jellies and cream– transducers for biomedical parameters(table) – pressure transducers – pulse sensors – respiration sensors

UNIT - II: BIOMEDICAL RECORDERS

Basic recording system – general considerations for bioelectric recorder amplifiers – sources of noise in low level recording circuits – preamplifiers – main amplifier & driver stage –writing systems – electrocardiograph – phonocardiograph –electroencephalograph – Electromyography

UNIT- III: MEASUREMENT & ANALYSIS TECHNIQUES IN BLOOD

Blood flow meters: Electromagnetic blood flow meter– Blood gas analyzers: blood pH measurement – measurement of blood pCO₂ – blood pO₂ measurement- Blood cell counters: methods of cell counting – coulter counters - automatic recognition and differential counting of cells

UNIT- IV: MODERN IMAGING SYSTEMS

X-ray machine – CT scanner: basic principle – contrast scale – system components – NMR: principles of NMR imaging – Fourier transform of the FID – Bloch equation - image reconstruction techniques – discrimination based on relaxation rates – basic NMR components – applications, biological effects and advantages of NMR imaging system

UNIT - V: ADVANCES IN BIOMEDICAL INSTRUMENTATION

Pacemakers- artificial heart valves – defibrillators - ventilators– audiometers – anesthesia machine – angiography – endoscope –cryogenic surgery

Text Books:

1. R. S. Khandpur, “Handbook of biomedical instrumentation”, Tata McGraw-Hill publisher, New Delhi
2. Dr. M. Arumugam, “Biomedical instrumentation”

BOOK FOR REFERENCE

1. Leslie Cromwell, Fred J. Weibell, Erich A. Pfeiffer, “Biomedical instrumentation and measurements”, 2nd edition, Prentice Hall of India pvt ltd.

PAPER: CORE PRACTICAL 3 – ADVANCED MICROPROCESSOR AND INTERFACING LAB

Paper Code: 12PELP03

HOUR: 3/Week

Credits: 2

Any Ten Experiments

1. 8-Bit Addition, Subtraction, Multiplication, and Division and using 8085 μ p Kit.
2. 16-Bit Addition, Subtraction, Multiplication, and Division and using 8085 μ p Kit.
3. Digital Clock using 8085 μ p Kit.
4. Stepper Motor Interface using 8085 μ p Kit.
5. DC Motor Speed Control using 8085 μ p Kit.
6. Traffic Light Controller Interface using 8085 μ p Kit.
7. Interfacing ADC 0809 with using 8085 μ p Kit.
8. DAC Interface with 8085 μ p Kit and Wave Form Generations using DAC.
9. ON and OFF Relay Control using 8085 interrupts.
10. Addition of two 16-Bit Numbers and Double Precision Addition using 8086 μ p Kit.
11. Subtraction of two 16-Bit Numbers and Double Precision Subtraction using 8086 μ p Kit.
12. 16-Bit Multiplication and 32-Bit Division using Addition of two 16-bit Numbers and Double Precision Addition using 8086 μ p Kit.
13. Temperature Measurements Using 8086

CORE PRACTICAL 4 – ANALOG AND DIGITAL COMMUNICATION LAB

Paper Code: 12PELP04

HOUR: 3/Week

Credits: 2

Any Ten Experiments

1. AM Modulation and Demodulation.
2. FM Modulation and Demodulation
3. Automatic Gain Control.
4. Voltage Control Oscillator.
5. Pulse Amplitude Modulation.
6. Pulse Width Modulation.
7. Pulse Position Modulation.
8. Study of Pulse Code Modulation.
9. Study of PLL Characteristics.
10. Digital Phase Detector.
11. TV Receiver if Section – Study and Fault Finding.
12. TV EHT Generation – Study and Fault Finding.
13. Study of Cable TV System.

SEMESTER III
CORE-6: DIGITAL SIGNAL PROCESSING

Paper Code: 12PEL06

HOUR: 6/Week
Credits: 5

UNIT I: STRUCTURES FOR DISCRETE TIME SYSTEMS

Introduction – block diagram and signal flow graph representation of Linear co-efficient Difference equation – basic structure for IIR system – basic network structures for FIR systems – Lattice structures – zero input cycles in fixed point realization of IIR digital filters

UNIT II: COMPUTATION OF DISCRETE FOURIER TRANSFORM

Introduction – efficient computation of DFT – Decimation in Time FFT algorithms – Decimation in Frequency algorithms – implementation of FFT algorithms – FFT algorithms for composite N

UNIT III: FILTER DESIGN TECHNIQUES

Introduction – design of discrete time IIR filters from continuous time filters – frequency Transformation of low pass IIR filters – design of FIR filters by windowing – comments on IIR and FIR digital filters

UNIT IV: ANALYSIS OF FINITE WORD LENGTH EFFECTS

Introduction – quantization process and errors – analysis of co-efficient quantization effects – Analysis of co-efficient quantization effects in FIR filters – A/D conversion noise analysis – low Sensitivity digital Filters – limit cycle in IIR filters – round of errors in FFT algorithms

UNIT V: DIGITAL SIGNAL PROCESSOR

TMS320C50 family overview – key features – architectural overview – functional block diagram – internal memory organization – CALU – system control – PLU – interrupts – addressing modes – Instruction set

TEXT BOOKS

1. Oppenheim A. V and Schaffer RW, Buck C “Discrete Time Signal Processing”, PHI, 1999
2. Sanjith K Mitra, “Digital Signal Processing – A Computer based approach”, Tata McGraw Hill, 1997
3. TMS 320C5X users guide, Texas instruments, 1993
4. www.ti.com/in - TMS320C5X user manual

CORE -7: OPTICAL FIBER COMMUNICATION

Paper Code: 12PEL07

HOUR: 6/Week

Credits: 5

UNIT I: OPTICAL FIBERS, STRUCTURES AND WAVEGUIDES FUNDAMENTALS

Optical fiber modes and configuration – Fiber types: step index fiber structure – ray optic representation – Wave representation – Mode theory of circular wave guides- Maxwell's equation – Wave guide equations – Wave equation for step-index fibers- Model equation – Modes in step index fibers- Power flow in step index fiber – Graded index fiber structure – Graded index numerical Aperture.

UNIT II: SIGNAL DEGRADATION IN OPTICAL FIBERS

Overview Attenuation – Attenuation unit- Absorption- Scattering loss-Bending losses-Core and Cladding loss-Signal distortion in optical wave guides – Information capacity determination – Group delay – Material dispersion-pulse broadening in graded index wave guides-Mode coupling.

UNIT III: POWER LAUNCHING AND COUPLING

Source of fiber power launching- Source output pattern- Power coupling calculations –Power launching versus wavelength –Equilibrium numerical aperture-Lensing schemes for coupling improvement Non-imaging micro sphere-Laser diode to fiber coupling – fiber to fiber joints –Mechanical misalignment – Fiber splicing losses –Fiber end face preparation –Splicing techniques –optical fiber connectors.

UNIT IV: APPLICATIONS AND FUTURE DEVELOPMENTS

Introduction- Public network application: Trunk network, Junction Network, Local access networks- Submerged systems-Synchronous network-Military, Civil, Consumer and Industrial applications.

UNIT V: ADVANCED SYSTEMS AND TECHNIQUES

Wavelength division multiplexing –LAN: Optical fiber bus-Ring topology –Star architecture-Fail safe fiber optic nodes. OPTICAL AMP: Basic applications-Optical amp types-gain-Amp noise figure-optical bandwidth –Photonic switching –Mechanical switches – Integrated optical switch.

TEXT & REFERENCE BOOKS:

1. Gerd Keiser, "OPTICAL FIBER COMMUNICATION", TMH,3rd Edition,ISBN-0-07-100785-7(Unit I,II,III and V).
2. John M.Senior, "OPTICAL FIBER COMMUNICATION PRINCIPLE AND PRACTICE "PHI 2nd Edition ISBN-81-203-0882-4(Unit IV).
3. Henry Zanger and Cynthia Zanger "FIBER OPTIC COMMUNICATION AND OTHER APPLICATION"
4. N.Sharma, "FIBER OPTICS IN TELECOMMUNICATIONS", TataMcGraw Hill.
5. K.Kao Charles "OPTICAL FIBER SYSTEMS: TECHNOLOGY, DESIGN AND APPLICATIONS", TMH

CORE 8-EMBEDDED SYSTEM

Paper Code: 12PEL08

**HOUR: 6/Week
Credits: 5**

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

Hardware Architecture and Pipelining - Program Memory - Register File Structure and Addressing Modes - CPU Register - Instruction Set - Simple Programs. MP-ASM 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 - Timers0 - 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 NXP INTERFACING:

Baud rate accuracy-basic hardware setup for NXP-baud rate accuracy-URAT Initialization-USART use-interfacing –LED-LCD-SWITCH-Key Board Using assembly language program.

TEXT BOOK:

1. Muhammad Ali Mazidi, Jarrice Gillispie Mazidi & Rolin D.Mckinlay - the 8051 Microcontroller and Embedded Systems 2nd Edition-Prentice Hall India Private Ltd.
2. John Pickamn - Microcontroller Based Embedded System - Pearson education
3. The 8051 microcontroller & embedded systems using assembly and c –kennth.J.AYALA, DHANANJAY V.GADRE.

ELECTIVE -III: VLSI DESIGN AND VHDL PROGRAMMING

Paper Code: 12PELZ03

HOUR: 6/Week

Credits: 4

UNIT I: CMOS CIRCUITS & PROCESSING TECHNOLOGY

MOS TRANSISTOR – Switches – CMOS Logics – Inverter – Combinational logic – NAND gate – NOR gate Compound gates – Multiplexer – Physical design of NAND, NOR gates – SI semiconductor technology overview – wafer processing – oxidation – epitaxy deposition – Ion Implantation – Diffusion – SI gate insulator process – CMOS technology - n-well process – p well process – Twin-Tub process – silicon on insulator – CMOS process enhancements

UNIT II: INTRODUCTION AND BAISC CONCEPT OF VHDL

History of VHDL – capabilities of VHDL – hardware abstraction – basic terminology – entity declaration - architecture body declaration – Basic language elements – identifiers – Data objects– Data type operators.

UNIT III: MODELING TECHNIQUES OF VHDL

Behavioral modeling: Entity declaration – architecture declaration – process statements- variable assignment statements – signal assignments statements – Wait statement – IF statement – Case statement – Null statement – Loop statement – Exit statement – Next statement – Assertion statement – Report statements – More on signal assignment statement – multiple process – postponed process – Data flow style of modeling

UNIT IV

Concurrent signal assignment statement versus signal assignment – Delta delay revisited – Multiple drivers – Conditional signal assignment statement – Selected signal assignment statement – The unaffected value – Block statement- Concurrent assertion statement – Value of the signal. Structural modeling: Component declaration – Component instantiation – Resolving signal value – examples – Half adder – Full adder – Four to one multiplexers – Decoders and encoders.

UNIT V: ADVANCED FEATURES IN VHDL

Generics – configuration – configuration specification – Configuration declaration – Default rules – Conversion functions – Direct instantiation – Incremental binding - Sub programs – Sub program overloading - operator overloading - signatures – default value of parameters –package declaration - package body – design file – design libraries – order of analysis – implicit Visibility – explicit visibility – attributes in VHDL.

TEXT BOOKS

1. Neil H.E. Westw kamaran eshraghin, ‘‘ PRINCIPLES OF CMOS VLSI DESIGN’’
2. J.Bhasker, ‘‘VHDL PRIMER’’, Low price Edition, 2001 PHI 3.Charles H.Roth, and Jr. ‘‘DIGITAL SYSTEM DESIGN USING VHDL’’, Brooks/Cole Thomson Learning PWS Publishing, ISBN-981-240-052-4

CORE PRACTICAL 5 – EMBEDDED SYSTEM LAB

Paper Code: 12PELP05

HOUR: 3/Week

Credits: 2

Any Ten 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*4 Matrix Keypad Interface.

CORE PRACTICAL -6: DIGITAL SIGNAL PROCESSING LAB

Paper Code: 12PELP06

HOUR: 3/Week

Credits: 2

Any 10 Experiments

1. Study of Basic Programs: Addition and Multiplication.
2. Study of Special Instructions.
3. Study of I/O Peripherals: ADC and DAC Initialization.
4. Sine, Square, Triangle and Saw Tooth Waveform Generation.
5. Sampling Theorem.
6. Stability Test.
7. Convolution of Two Discrete Signals.
8. Correlation of Two Discrete Signals.
9. Fast Fourier Transform.
10. Low Pass and High Pass Butter worth Analog Filters.
11. Low Pass and High Pass Butter worth Digital Filters.
12. Low Pass and High Pass CHEBYSHEV Type-1 Analog Filters.
13. Low Pass and High Pass CHEBYSHEV Type-1 Digital Filters.

SEMESTER -IV
CORE-9: THIN FILM AND NANO TECHNOLOGY

Paper Code: 12PEL09

HOUR: 6/Week
Credits: 5

UNIT I:

Vacuum science and technology: vacuum pumps, gauges, vacuum seals and notion and electrical feed through UHV materials and technology-thin film growth and nucleation growth modes.

UNIT II:

Thin film deposition techniques: physical vacuum deposition, e-beam. MBE, sputtering, laser ablation, chemical-CVD MOCVD, Electrochemical deposition, plasma assisted techniques.

UNIT III:

Thick film deposition techniques: screen printing, thickness measurements of films talystep, quartz crystal microbalance, optical methods-mechanical properties and adhesion characterization techniques to determine harness.

UNIT IV: NANOELECTRONICS AND INTEGRATED SYSTEMS

Basics of nano electronics – Single Electron Transistor – Quantum Computation – tools of micro nano fabrication – nanolithography – quantum electronic devices – MEMS and NEMS – Dynamics of NEMS – limits of integrated electronics.

UNIT V: NANODEVICES AND APPLICATIONS

Nano magnetic materials – Particulate Nan magnets and geometrical Nan magnets – Magneto resistance – Probing nano magnetic materials – Nan magnetism in technology – Carbon Nano tubes – fabrication- applications – Organic FET, organic LED's – Organic photovoltaic – Injection lasers, quantum cascade lasers, optical memories, electronic applications, coulomb blockade devices.

Text Books:

1. Kelsall Robert W, Ian Hamley, Mark Geoghegan, "Nanoscale Science and Technology", Wiley Eastern, 2004.
2. Michael Kohler, Wolfgang, Fritzsche, "Nanotechnology: Introduction to Nanostructuring Techniques", 2004.
3. William Goddard, Donald W Brenner, "Handbook of Nano Science Engineering and Technology", CRC Press, 2004.
4. Bharat Bhushan, "Springer Handbook of Nanotechnology", 2004.
5. Charles P Poole, Frank J Owens, "Introduction to Nanotechnology", John Wiley and Sons, 2003.

CORE-10: INDUSTRIAL AUTOMATION

Paper Code: 12PEL10

**HOUR: 6/Week
Credits: 5**

UNIT-I: INTRODUCTION TO PLC, LADDER DIAGRAM FUNDAMENTALS

Introduction to PLC – PLC Vs Microcontroller – Basic Components and their Symbols – Control Transformers – Fuses – Switches – Relays – Time Delay Relays – Fundamentals of Ladder Diagram – Basic diagram framework – Wiring Reference Designators – Boolean Logic & Relay Logic – AND-OR & OR-AND – Ground Test– The Latch – Two handed Anti-Tie Down, Anti-Repeat – Combined Circuit – Machine Control Terminology.

UNIT-II: PROGRAMMABLE LOGIC CONTROLLER & FUNDAMENTAL PROGRAMMING

PLC Configurations – System Block Diagram – Update – Solve the Ladder – Physical Components Vs Program components – Light Control – Internal Relays – Disagreement Circuit - Majority Circuits – Oscillators – Holding Contacts - Always ON & OFF Contacts – Ladder Diagrams having complex Rung.

UNIT - III: ADVANCED PROGRAMMING TECHNIQUES AND OVERVIEW OF MNEMONIC PROGRAMMING CODE

Ladder Program execution Sequence – One Shot– JK-Flip Flop – Counters – Sequencers – Timers – Master control relays and control Zones – AND Ladder Rung – Entering Normally Closed Contacts – OR Ladder Rung – Simple Branches – Complex Branches.

UNIT- IV: WIRING TECHNIQUES, ANALOG I/O & SENSORS

PLC Power Connection – input wiring – Inputs having a single common – Isolated inputs – Output wiring – Relay outputs – Solid state outputs – Analog (A/D) inputs – Analog (D/A) output – Sensor Output classification – Connecting Discrete sensors to PLC inputs – Proximity sensors – Optical Proximity Sensors.

UNIT- V: WORKING IN OMRON & KEYENCE IDE WITH LADDER LOGIC

Introduction to OMRON & KEYENCE – Creating a project – Ladder Programming – Compiling and Executing – Ladder Programs – Logic Gate functions (AND, OR, NOT, NAND, NOR, XOR) – Using Timers (ON delay timer, OFF delay timer, one shot pulse, flashing pulse), Counters – Using Calendar functions

Text Books:

1. John R. Hackworth, Frederick D. Hackworth, Jr., “Programmable Logic Controllers, Programming Methods and Applications”, New Delhi: Pearson Education, 3rd edition.

ELECTIVE -IV: MODERN COMMUNICATION SYSTEM

Paper Code: 12PELZ04

HOUR:6/Week

Credits: 4

UNIT-I Review of Modulation and Coding Theory

Review of the main components of a Digital Communication System-Review of Block Codes - Convolution codes-Lattices

UNIT-II Trellis Coded Modulation (TCM)

Introduction and Fundamentals-Trellis Representation-Set Partitioning-Examples of TCM schemes-Decoding TCM-Performance Evaluation in AWGN channel-Upper Bound to Error Probability-Lower Bound to Error Probability-Examples-Computation of d_{free}

UNIT-III Digital Signaling over Fading Multipath Channels

Characterization of Fading Multipath Channels-The Effect of Signal Characteristics on the Choice of a Channel Model-Diversity Techniques for Fading Multipath Channels-Digital Signaling over a Frequency-Selective, Slowly Fading Channel-Binary and M-ary Signaling over a Frequency-Nonselective, Slowly Fading Channel-Coded Waveforms for Fading Channel-Probability of Error. Hard and Soft Decision-Performance of Convolutional Codes-Constant Weight and Concatenated Codes-Analysis and Performance of TCM for Fading Channels

UNIT-IV Spread Spectrum Signals for Digital Communications

Model of a Spread Spectrum Communications System-Direct Sequence Spread spectrum Signals-Rake Receivers-Multi-user Detection-Frequency Hopped Spread Spectrum Signals-Other types of Spread Spectrum Signals-Spread Spectrum in multipath channels

UNIT-V Multichannel and Multicarrier System

Multiple Access Techniques (CDMA, TDMA, FDMA, SDMA, PDMA)-Capacity of Multiple Access Systems-Multichannel Digital Communications in AWGN-Multicarrier Communications

TEXTBOOKS:

1. Digital Communications, by John G. Proakis and Salehi, McGraw-Hill Book Company, 4th edition

BOOKS FOR REFERENCES:

1. Introduction to Trellis-Coded Modulation with Applications, by Ezio Biglieri, Dariush Divsalar, Peter J. McLane and Marvin K. Simon. Macmillan Publishing Company, 1991.
2. Communication System Engineering by John Proakis and M. Salehi, Prentice Hall, Second Edition.
3. Principles of Communication Engineering by J. M. Wozencraft and I. M. Jacobs. Wiley, 1967.
4. Error-Correction Coding for Digital Communications by G. C. Clark, Jr. and J. B. Cain. Plenum Press, 1981.
5. Error Control Coding: Fundamentals and Applications by S. Lin and D. J. Costello. Prentice-Hall, 1983.
6. Information Theory and Reliable Communication by R. G. Gallager. Wiley, 1968.
7. Digital Communications. B. Sklar, Prentice-Hall, 2001.

PRACTICAL -7: PROGRAMMABLE LOGIC CONTROL LAB

Paper Code: 12PELP07

HOUR: 3/Week

Credits: 2

ANY TEN EXPERIMENTS

1. Operating a simple loads using relays, switches and pushbuttons
2. C Input – Output Wiring Methods
3. Programming the PLC via Ladder logic
4. Speed control of dc motor using plc
5. Traffic light controller.
6. testing of relays using plc
7. using timer problems
8. using counter problems
9. Plc using up down counter problems.
10. Plc using timer counters problems.
11. Linear actuation with hydraulic cylinder with counter and speed control
12. Hydraulic rotation with timer and speed control
13. sequential operation of pneumatic cylinders

EDC PAPER –1 CELLULAR PHONE SERVICING

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 – Base band layer – Link Manager Protocol –L2CAP.

Unit-IV

Digital Audio broad casting – Digital video broad casting – DVB data broadcasting – 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
2. Jochen Schiller – Mobile Communication – 2nd Edition – Pearson Education Ltd, New Delhi.

Reference Book:

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

EDC PAPER –1 ELECTRONIC INSTRUMENTS TESTING

UNIT-I

General electrical diagnosis -Battery diagnosis and repair- Starting system diagnosis and repair - Charging system diagnosis and repair- Lighting systems diagnosis and repair -Gauges and warning devices diagnosis and repair.

UNIT -II:

Transit Coach Basic Electrical Transit Coach Intermediate Electrical -Advanced Reading Legends and Schematics - Digital multimeter usage -Advanced Charging Systems - Wiring Soldering and Wire Connectors and Terminals - Transit Bus Programmable Logic Controllers and Multiplexing

UNIT- III:

Perform battery tests (load, capacitance and specific gravity) determine needed repairs- Inspect, clean, and service battery, cables, and terminal connections and disconnects; replace as required- Inspect, clean and repair battery boxes, mounts and hold downs; replace as required- Charge battery(s), using slow or fast charge method as appropriate- Jump-start a transit bus using jumper cables and a booster battery or auxiliary power supply.

UNIT-IV:

Use of hand tools, electrical & electronic measuring and test-Equipment for locating and repairing faults and malfunctions-Use of electrical measuring & testing equipments in land and workshop-Use of electronic instrument, measuring equipment Interpretation of results

UNIT-V:

Obtained.-, AC/DC Machines, power circuits, electrical switches Gears & starters-Commissioning & Performance testing of electrical equipment on board ship.

TEXT BOOK:

1. Electronics test instruments analog and digital measurements Robert. A. Witte (2nd edition)

NOTE: ALL THE PAPERS ARE VALUED BY THE BOARD OF ELECTRONICS AND COMMUNICATION