



SCHEME FOR FOURTH SEMESTER (ELECTRONICS & COMMUNICATION ENGINEERING)

Sr. No.	Subject	Study Scheme			EVALUATION SCHEME						Total Marks	
					INTERNAL ASSESSMENT		EXTERNAL ASSESMENT (EXAMINATION)					
					Theory	Practical	Written Paper		Practical			
					Max. Marks	Max. Marks	Max. Marks	Hrs.	Max. Marks	Hrs.		
Hrs/Week			L	T	P	Max. Marks	Max. Marks	Max. Marks	Hrs.	Max. Marks	Hrs.	Total Marks
4.1*	Network Filters And Transmission Lines	3										
4.2**	Communication Systems	3	-	3	25	25	100	3	50	3	200	
4.3	Instrumentation	3	-	2	25	25	100	3	50	3	200	
4.4	Digital Electronics - II	3	-	3	25	25	100	3	50	3	200	
4.5*	Microprocessor and Peripheral Devices	4	-	2	25	25	100	3	50	3	200	
4.6*	Electronics Design and Fabrication Techniques	-	-	6	-	50	-	-	+50	3	100	
# Student Centred Activities		-	-	5	-	25	-	-	-	-	25	
Total		16	-	24	125	200	500	-	300	-	1125	

* Common with other diploma programmes

** Common with diploma programme in Electronics (Power Electronics), Electronics Instrumentation and Electrical Engineering

+ Includes 25 marks for Viva-voce

Student Centred Activities will comprise of co-curricular activities like extension lectures, library studies, games, hobb clubs e.g. photography painting, singing, seminars, declamation contests, educational field visits, N.C.C., NSS, Cultural Activities, Civil Defence/Disaster Management activities etc.

Industrial Training - After examination of 4th Semester, the students shall go for training in a relevant industry/field organization for a minimum period of 6 weeks and shall prepare a diary. It shall be evaluated during 5th semester by his/her teacher for 50 marks. The students shall also prepare a report at the end of training and shall present it in a seminar, which will be evaluated for another 50 marks. This evaluation will be done by HOD and lecturer incharge – training in the presence of one representative from training organization.



SYLLABUS: Polytechnic (ECE)

Department: Electronics & Communication Engineering - 4th Semester

Subject: Network, Filter & Transmission Line (Theory)

Subject Code: 121041

Detailed Contents

Unit No.1 Networks

- Topic No.1: Two port (four terminals) network, Symmetrical- Balanced and unbalanced network
- Topic No.2: Symmetrical T-network, Symmetrical Π network, Symmetrical Ladder network
- Topic No.3: Symmetrical Lattice network, Symmetrical L-network, Symmetrical Bridge T-network
- Topic No.4: Asymmetrical networks: - Balanced and unbalanced network, Asymmetrical T-network
- Topic No.5: Asymmetrical Π network, Asymmetrical Ladder network, Asymmetrical Lattice network
- Topic No.6: Asymmetrical L-network, Asymmetrical Bridge T-network
- Topic No.7: Symmetrical Network: - Concept and significance of the terms characteristic impedance, Propagation constant, attenuation constant, phase shift constant and insertion loss of T-Network
- Topic No.8: Symmetrical Network:- Concept and significance of the terms characteristic impedance, propagation constant, attenuation constant, phase shift constant and insertion loss of Π Network
- Topic No.9: Asymmetrical Network- Concept and significance of iterative impedance, Image impedance, image transfer Constant and insertion loss
- Topic No.10: The half section (L-section); Symmetrical T and Π sections into half sections

Unit No.2 Attenuators

- Topic No.11: Units of attenuation (Decibels and Nepers), General characteristics of attenuators
- Topic No.12: Analysis and design of simple attenuator of Symmetrical T, Analysis and design of simple attenuator of Π type.

Unit No.3 Filters

- Topic No.13: Brief idea of the use of filter networks in different communication systems
- Topic No.14: Concept of low pass filter, High pass filter, Band pass filter, Band stop filter, Prototype Filter Section
- Topic No.15: Impedance characteristics vs. frequency characteristics of a low pass filter & their Significance Attenuation Vs frequency; Phase shift Vs frequency
- Topic No.16: Impedance characteristics vs. frequency characteristics of a high pass filter and their Significance Attenuation Vs frequency; Phase shift Vs frequency,
- Topic No.17: Characteristics impedance vs frequency of T and Π filters and their significance
- Topic No.18: Simple design problems of prototype low pass filter, M-Derived Filter Sections,
- Topic No.19: Limitation of prototype filters, Need of m-derived filters, Crystal Filters, Crystal and its equivalent circuits
- Topic No.20: Special properties of piezoelectric filter, Use of crystal filter, Active Filters, Basic concept of active filters, Comparison of active filter with passive filters.

Unit No.4 Transmission Lines

- Topic No.21: Transmission Lines, Types of Transmission Lines , Applications of Transmission Lines
- Topic No.22: Distributed constants, T and Π representation of transmission line section,
- Topic No.23: Definition of characteristic impedance, Propagation constant, Attenuation constant
- Topic No.24: Phase shift constant, Concept of infinite line
- Topic No.25: Condition for minimum distortion and minimum attenuation of signal on-the-line and
- Topic No.26: Introduction to loading methods, Concept of reflection and standing waves
- Topic No.27: Definition of reflection coefficient, SWR & VSWR and their relation (no derivation)
- Topic No.28: Transmission line equation, Expression for voltage, current and impedance at a point on the line.
- Topic No.29: Concept of transmission lines at high frequencies, Introduction to stubs. (Single, open and short stubs).



STUDY SCHEME			EVALUATION SCHEME						Total Marks
			Internal Assessment		External Assessment (Examination)				
Hrs/week			Theory	Practical	Written Paper		Practical		
L	T	P	Max. Marks	Max. Marks	Max. Marks	Hrs	Max. Marks	Hrs	
3	-	-	25	-	100	3	-	-	

RECOMMENDED BOOKS

- (1) Network Lines and Fields by John D Ryder; Prentice Hall of India, New Delhi
- (2) Network Filters and Transmission Lines by AK Chakarvorty; Dhanpat Rai and Co. Publication, New Delhi
- (3) Network Analysis by Van Valkenburg; Prentice Hall of India, New Delhi
- (4) Network Analysis by Soni and Gupta; Dhanpat Rai and Co. Publication, New Delhi
- (5) Network Theory and Filter Design by Vasudev K. Aatre
- (6) Network Filters and Transmission line by Umesh Sinha
- (7) Network filter and Transmission lines by Yashpal, Ishan publications, Ambala City

INSTRUCTION STRATEGY

Stress should be laid on problems in networks/ filter and transmission lines. Practical must be carried out after completion of topic to gain a good know how on the subject students should be given home assignments on various topics, stress on making own circuit models to calculate input/output impedance, characteristic impedance, losses etc. should be carried out by the students..

SUGGESTED DISTRIBUTION OF MARKS FOR FACILITATING PAPER SETTER

Sr.No.	Unit Name	Time Allotted (Hrs)	Marks Allotted (%)
1	Networks	14	25
2	Attenuators	5	10
3	Filters	13	30
4	Transmission Lines	16	35
Total		48	100



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Affiliated to State Board of Technical Education, Panchkula, Haryana

Subject: Network, Filter & Transmission Line (Practical)

Subject Code: 121041(P)

LIST OF PRACTICALS

- (1) To measure the characteristic impedance of symmetrical T and Π networks
- (2) To measure the image impedance of a given asymmetrical T and Π networks
- (3) For a prototype low pass filter:
 - i) Determine the characteristic impedance experimentally
 - ii) Plot the attenuation characteristic
- (4) To design and measure the attenuation of a symmetrical T/ Π type attenuator
- (5) For a prototype high pass filter:
 - i) Determine the characteristic impedance experimentally
 - ii) To plot the attenuation characteristic
- (6) i) To plot the Impedance characteristic of a prototype band-pass filter
ii) To plot the attenuation characteristic of a prototype band pass filter
- (7) i) To plot the impedance characteristic of m- derived low pass filter
ii) To plot the attenuation characteristics of m-derived high pass filter
- (8) To observe the information of standing waves on a transmission line and measurement of SWR and Characteristic impedance of the line
- (9) Draw the attenuation characteristics of a crystal filter

STUDY SCHEME			EVALUATION SCHEME						Total Marks
			Internal Assessment		External Assessment (Examination)				
Hrs/week			Theory	Practical	Written Paper		Practical		
L	T	P	Max. Marks	Max. Marks	Max. Marks	Hrs	Max. Marks	Hrs	
-	-	3	-	25	-	-	50	3	75



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Subject: Communication System (Theory)

Subject Code: 121042

Detailed Contents

Unit No.1 AM/FM Transmitters

- Topic No. 1: Classification of transmitters on the basis demodulation.
- Topic No. 2: Classification of transmitters on the basis of service.
- Topic No. 3: Classification of transmitters on the basis of frequency.
- Topic No. 4: Classification of transmitters on the basis of power
- Topic No. 5: Block diagram of AM transmitters and working of each stage
- Topic No. 6: Block diagram and working principles of reactance FET
- Topic No. 7: Block diagram and working principles of Armstrong FM transmitters

Unit No.2 AM/FM Radio Receivers

- Topic No. 8: Principle and working with block diagram of super heterodyne AM receiver. Function of each block and typical waveforms at input and output of each block.
- Topic No. 9: Performance characteristics of a radio receiver sensitivity, selectivity, fidelity, S/N ratio, image rejection Ratio and their measurement procedure.
- Topic No. 10: ISI standards on radio receivers (brief Idea)
- Topic No. 11: Selection criteria for intermediate frequency (IF).
- Topic No. 12: Concepts of simple and delayed AGC
- Topic No. 13: Block diagram of an FM receiver, function of each block and waveforms at input and output of different blocks.
- Topic No. 14: Need for limiting and de-emphasis in FM reception
- Topic No. 15: Block diagram of communication receivers, differences with respect to broadcast receivers.

Unit No.3 Antennas

- Topic No. 16: Electromagnetic spectrum and its various ranges: VLF, LF, MF, HF, VHF, UHF, Microwave.
- Topic No. 17: Physical concept of radiation of electromagnetic energy from a dipole.
- Topic No. 18: Concept of polarization of EM Waves.
- Topic No. 19: Definition and physical concepts of the terms used with antennas like point source, gain directivity, aperture, effective area, radiation pattern, beam width and radiation resistance, loss resistance.
- Topic No. 20: Types of antennas- brief description, characteristics and typical applications of half wave dipole.
- Topic No. 21: Brief description, characteristics and typical applications of Medium wave (mast) antenna.
- Topic No. 22: Brief description, characteristics and typical applications of folded dipole.
- Topic No. 23: Brief description, characteristics and typical applications of patch loop antenna.
- Topic No. 24: Brief description, characteristics and typical applications of yagi antenna
- Topic No. 25: Brief description, characteristics and typical applications of ferrite rod antenna (used in transistor Receivers)
- Topic No. 26: Brief description of broad-side array and their radiation pattern and applications (without analysis)
- Topic No. 27: Brief description of end fire arrays, their radiation pattern and applications (without analysis)
- Topic No. 28: Brief idea about rhombic antenna, Brief idea about dish antenna

Unit No.4 Propagation

- Topic No. 29: Basic idea about different modes of wave propagation and typical areas of application.
- Topic No. 30: Ground wave propagation and its characteristics, summer field equation for field strength.
- Topic No. 31: Space wave communication–line of sight propagation, standard atmosphere, concept of effective earth radius range of space wave propagation standard atmosphere
- Topic No. 32: Duct propagation: sky wave propagation-ionosphere and its layers. Explanation of terms-virtual height, critical frequency, skip distance, maximum usable frequency, multiple hop propagation.

Unit No.5 Digital Modulation Technique

- Topic No. 32: Introduction of PCM, DPCM, DELTA Modulation
- Topic No. 34: Basic block diagram and principle of working of the following ASK, FSK, PSK, QPSK
- Topic No. 35: Spread Spectrum Techniques, Frequency Hopping Technique



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STUDY SCHEME			EVALUATION SCHEME						Total Marks
			Internal Assessment		External Assessment (Examination)				
Hrs/week			Theory	Practical	Written Paper		Practical		
L	T	P	Max. Marks	Max. Marks	Max. Marks	Hrs	Max. Marks	Hrs	
3	-	-	25	-	100	3	-	-	125

RECOMMENDED BOOKS

- (1) Communication Systems by George Kennedy, Tata McGraw Hill Education Pvt Ltd, New Delhi.
- (2) Communication Systems by A.K. Gautam, SK Kataria and Sons, New Delhi.
- (3) Fundamentals of Communication System by Fitz, Tata McGraw Hill Education Pvt Ltd, New Delhi
- (4) Communication System by Puri, Ishan Publications, Ambala City.
- (5) Electronic Communication Sytесms by K.S. Jamwal, Dhanpat Rai and Sons, New Delhi.
- (6) Electronic Communication System by Roddy and Coolen, Prentice Hall of India, New Delhi.
- (7) Handbook of Experiments in Electronics and Communication Engineering by S. Poornachandra Rao Publishing House Pvt Ltd, Jangpura, New Delhi

INSTRUCTION STRATEGY

The subject requires both theory and practical emphasis simultaneously, so that the student can understand the practical significance of the various areas. Visits to instrumentation and communications industries must be carried out, so as to make the students can understand where and how the various instruments are used in the industry..

SUGGESTED DISTRIBUTION OF MARKS FOR FACILITATING PAPER SETTER

Sr.No.	Unit Name	Time Allotted (Hrs)	Marks Allotted (%)
1	AM/FM Transmitters	4	10
2	AM/FM Radio Receivers	10	25
3	Antennas	12	25
4	Propagation	12	20
5	Digital Modulation Techniques	10	20
Total		48	100



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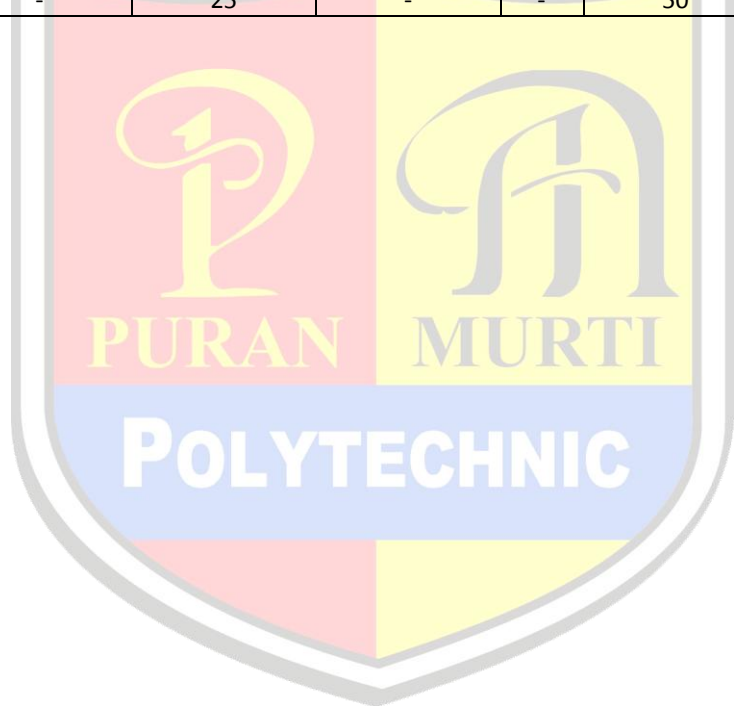
Subject: Communication System (Practical)

Subject Code: 121042(P)

LIST OF PRACTICALS

- (1) To observe the waveforms at different stages of a AM transmitter
- (2) To observe the waveforms at different stages of a Radio Receiver
- (3) To align AM broadcast radio receiver
- (4) To identify and study the various types of antennas used in different frequency ranges.
- (5) To plot the radiation pattern of a directional and omni directional antenna
- (6) To plot the variation of field strength of a radiated wave, with distance from a transmitting antenna

STUDY SCHEME			EVALUATION SCHEME						Total Marks
			Internal Assessment		External Assessment (Examination)				
Hrs/week			Theory	Practical	Written Paper		Practical		
L	T	P	Max. Marks	Max. Marks	Max. Marks	Hrs	Max. Marks	Hrs	
-	-	3	-	25	-	-	50	3	75





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Subject: Instrumentation (Theory)

Subject Code: 121043

Detailed Contents

Unit No.1 Measurement

- Topic No.1: Importance of measurement
- Topic No.2: Basic measuring systems
- Topic No.3: Advantages and limitations of each measuring systems
- Topic No.4: Display devices

Unit No.2 Transducers

- Topic No.5: Resistance, Inductance type transducer
- Topic No.6: Capacitance, Electromagnetic type transducer
- Topic No.7: Piezoelectric type transducer

Unit No.3 Measurement of Displacement and Strain

- Topic No. 8: Wire wound potentiometer
- Topic No. 9: LVDT
- Topic No. 10: Strain gauges and their different types such as inductance type, resistive type, wire and foil type
- Topic No. 11: Gauge factor
- Topic No. 12: Gauge materials and their selections
- Topic No. 13: Use of electrical strain gauges
- Topic No. 14: Strain gauge bridges and amplifiers.

Unit No.4 Force and Torque Measurement

- Topic No. 15: Load measurements by using elastic transducers
- Topic No.16: Electrical strain gauges
- Topic No.17: Load cells
- Topic No.18: Measurements of torque by brake, dynamometer
- Topic No.19: Speed measurements; different methods, devices

Unit No.5 Pressure Measurement

- Topic No.20: Bourdon pressure gauges
- Topic No.21: Electrical pressure pickups and their principle, construction and applications
- Topic No.22: Use of pressure cells

Unit No.6 Flow Measurement

- Topic No.23: Basic principles of magnetic and ultrasonic flow meters

Unit No.7 Measurement of Temperature

- Topic No.24: Bimetallic thermometer
- Topic No.25: Thermoelectric thermometers
- Topic No.26: Resistance thermometers, thermocouple
- Topic No.27: Thermistors and pyrometer
- Topic No.28: Temperature recorders

Unit No.8 Measurement of other non electrical quantities

- Topic No.29: Humidity
- Topic No.30: Ph, level and vibrations

STUDY SCHEME			EVALUATION SCHEME						Total Marks
			Internal Assessment		External Assessment (Examination)				
Hrs/week			Theory	Practical	Written Paper		Practical		
L	T	P	Max. Marks	Max. Marks	Max. Marks	Hrs	Max. Marks	Hrs	
3	-	-	25	-	100	3	-	-	125



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RECOMMENDED BOOKS

- (1) Electronic Measurement and Instrumentation by Dr Rajendra Prasad
- (2) Electronic Measurement and Instrumentation by JB Gupta, SK Kataria and Sons, New Delhi
- (3) Electrical and Electronics Measurement and Instrumentation by AK Sawhney, Dhanpat Rai and Co., New Delhi
- (4) Electronic Instrumentation and Measurement Techniques by WD Cooper, AD Helfrick Prentice Hall of India Pvt. Ltd. New Delhi
- (5) Industrial Instrumentation by Umesh Rathore, SK Kataria and Sons, New Delhi

INSTRUCTION STRATEGY

The teacher should explain the scope of various measuring devices and their practical applications in the field. The transducers and measuring devices must be shown to the students and they should be trained in the reaction, operation, maintenance and calibrations. Frequent visits to nearby process industries will be of immense help to the students.

SUGGESTED DISTRIBUTION OF MARKS FOR FACILITATING PAPER SETTER

Sr.No.	Unit Name	Time Allotted (Hrs)	Marks Allotted (%)
1	Measurements	3	6
2	Transducers	6	12
3	Measurement of Displacement and Strain	10	20
4	Force and Torque Measurement	10	20
5	Pressure Measurement	5	12
6	Flow Measurement	4	8
7	Measurement of Temperature	5	12
8	Measurement of other non electrical quantities	5	10
	Total	48	100



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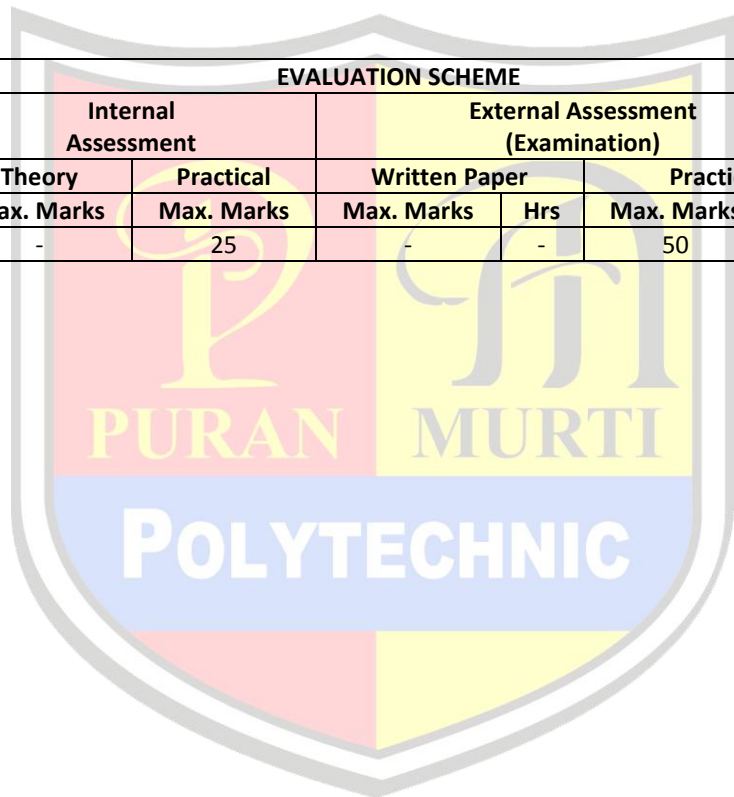
Subject: Instrumentation (Practical)

Subject Code: 121043(P)

LIST OF PRACTICALS

- (1) To measure the level of a liquid using a transducer
- (2) To measure temperature using a thermo-couple
- (3) Study and use of digital temperature controller
- (4) Use of thermistor in ON/OFF transducer
- (5) Study of variable capacitive transducer
- (6) Draw the characteristics of a potentiometer
- (7) To measure linear displacement using LVDT
- (8) To study the use of electrical strain gauge
- (9) To study weighing machine using load cell
- (10) To study pH meter.

STUDY SCHEME			EVALUATION SCHEME						Total Marks
			Internal Assessment		External Assessment (Examination)				
Hrs/week			Theory	Practical	Written Paper		Practical		
L	T	P	Max. Marks	Max. Marks	Max. Marks	Hrs	Max. Marks		Hrs
-	-	2	-	25	-	-	50	3	75





Detailed Contents

Unit No.1 Logic families

- Topic No.1: Logic Family Classification: TTL, ECL, MOS, CMOS, Types of Integration SSI, MSI, LSI, VLSI.
- Topic No.2: Characteristics of TTL & CMOS and their comparison, Propagation delay, speed, noise margin, logic level, power dissipation, fan-in, fan-out, power supply requirements.
- Topic No.3: Open collector & totem pole output circuits, operation of standard TTL, CMOS as NAND & NOR gates.
- Topic No.4: CMOS to TTL interfacing, TTL to CMOS interfacing.
- Topic No.5: Introduction to tristate Devices, tristate Buffer & tristate Inverter.
- Topic No.6: Construction and working principle of DIAC, TRIAC and their V-I characteristics

Unit No. 2 A/D and D/A Converter

- Topic No.7: D/A Converter: Performance characteristics of D/A Converter, binary register network and register ladder network, methods of D/A Converter and applications.
- Topic No.8: A/D Converter: Performance characteristics of A/D Converter, single slope, dual slope, successive approximation and parallel A/D Converter.

Unit No.3 Memories

- Topic No.9: Memory organization, classification of semiconductor memories, ROM, PROM, DROM, EPROM, EEPROM, RAM, expansion of memory. Topic No.10: CCD memories, content addressable memory
- Topic No.11: Programmable logic devices, PROM at PLD, programmable logic array (PLA), programmable array Logic (PAL)
- Topic No.12: field programmable gate array (FPGA), familiarization with common ICs.

Unit No.4 Combinational Circuits

- Topic No.13: Minimization of Boolean expressions using Quine Mcclaaskey method

Unit No.5 Sequential Circuits

- Topic No.14: Essential components of sequential circuits, synchronous and asynchronous sequential circuits
- Topic No.15: Classification of sequential circuits (Meely and Moore Machine), design of counters using J-K and R-S flops.

Unit No.6 Arithmetic and Logic Unit

- Topic No.16: Basic idea about arithmetic logic unit w. r. t. IC 74181 and applications.
- Topic No.17: Implementation of binary multiplication, division, subtraction and addition

Unit No.7 Introduction to Fuzzy logic

- Topic No.18: Fuzzy sets and classical sets and their operations, Fuzzy relations.
- Topic No.19: Properties of membership functions, Fuzzification, Defuzzification, Fuzzy control system.

STUDY SCHEME			EVALUATION SCHEME						Total Marks
			Internal Assessment			External Assessment (Examination)			
Hrs/week			Theory	Practical	Written Paper		Practical		
L	T	P	Max. Marks	Max. Marks	Max. Marks	Hrs	Max. Marks	Hrs	
3	-	-	25	-	100	3	-	-	125



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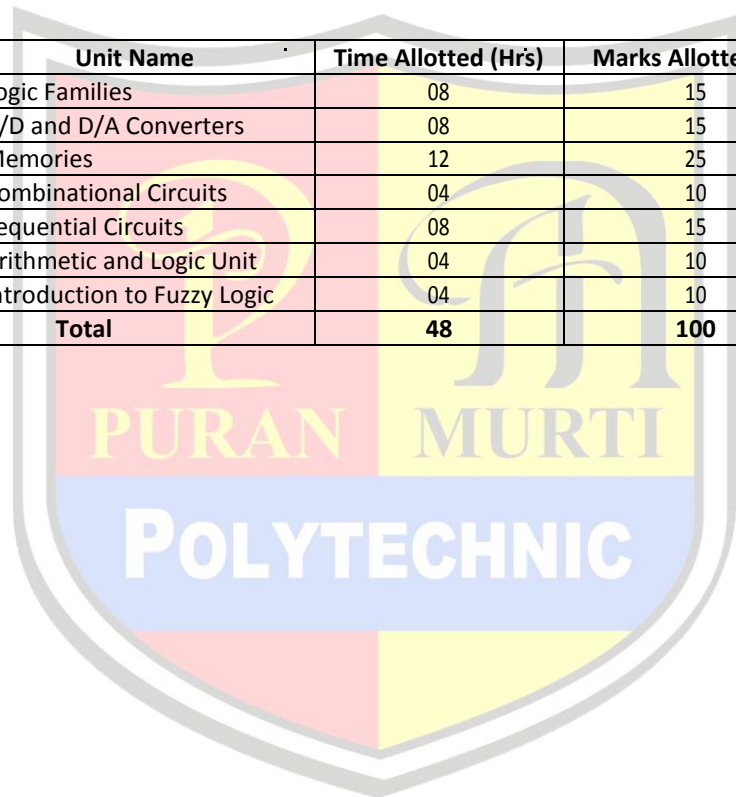
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RECOMMENDED BOOKS

- (1) Digital Systems and Applications by RJ Tocci, Prentice Hall of India, New Delhi
- (2) Digital Electronics by RP Jain, Tata McGraw Hill, New Delhi
- (3) Digital Electronics by KS Jamwal, Dhanpat Rai & Co., New Delhi
- (4) Digital Logic Designs by Morris Mano, Prentice Hall of India, New Delhi
- (5) Digital Electronics –II by Yashpal and Sanjeev Kumar, North Publication
- (6) Digital Designs by CJ Roth, Jaico Publication
- (7) Digital Electronics by Rajaraman V, Prentice Hall of India, New Delhi
- (8) Digital Fundamentals by Malvino and Leachy, Tata McGraw Hill Publishers, New Delhi
- (9) Digital Systems by Sanjay K Bose, Wiley Eastern (P) Ltd., New Delhi
- (10) Fuzzy logic with Engineering Application by T.J. Ross; Wiley Eastern (P) Ltd., New Delhi

SUGGESTED DISTRIBUTION OF MARKS FOR FACILITATING PAPER SETTER

Sr.No.	Unit Name	Time Allotted (Hr's)	Marks Allotted (%)
1	Logic Families	08	15
2	A/D and D/A Converters	08	15
3	Memories	12	25
4	Combinational Circuits	04	10
5	Sequential Circuits	08	15
6	Arithmetic and Logic Unit	04	10
7	Introduction to Fuzzy Logic	04	10
	Total	48	100





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Subject: Digital Electronics-II (Practical)

Subject Code: 121044(P)

LIST OF PRACTICALS

- (1) Verify the operation of D/A converter
- (2) Verify the operation of A/D converter
- (3) Verify the writing and reading operation of RAM IC
- (4) Design J-K Flip-flop counter and verify its truth table
- (5) Familiarity with the use of EPROM programmes and UV index
- (6) Exercise on programming of EPROM
- (7) Design and implement full adder and full subtractor
- (8) Verify the logical operation, arithmetic operation of binary numbers using IC74181

STUDY SCHEME			EVALUATION SCHEME						Total Marks
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Hrs/week			Theory	Practical	Written Paper		Practical		
L	T	P	Max. Marks	Max. Marks	Max. Marks	Hrs	Max. Marks	Hrs	
-	-	3	-	25	-	-	50	3	75





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Subject: Microprocessors and Peripheral Devices (Theory)

Subject Code: 120844

Detailed Contents

Unit No.1 Evolution of Microprocessor

Topic No. 1: Typical organization of a microcomputer system and functions of its various blocks.

Topic No. 2: Microprocessor

Topic No. 3: Evolution of microprocessor

Topic No. 4: Function and impact on modern society

Unit No. 2 Architecture of a Microprocessor (With reference to 8085 microprocessor)

Topic No. 5: Functional block diagram of 8085 and function of each block

Topic No. 6: Concept of Bus and bus organization of 8085

Topic No. 7: Pin details of 8085 and related signals

Topic No. 8: Demultiplexing of address/data bus

Topic No. 9: Generation of read/write control signals

Topic No. 10: Steps to execute a stored programme

Unit No.3 Instruction Timing and Cycles

Topic No. 11 Instruction cycle

Topic No. 12: machine cycle and T-states

Topic No. 13: Fetch and execute cycle

Unit No.4 Programming (with respect to 8085 microprocessor)

Topic No. 14: Brief idea of machine and assembly languages

Topic No. 15: Machines and Mnemonic codes.

Topic No. 16: Instruction format and Addressing mode.

Topic No. 17: Identification of instructions as to which addressing mode they belong.

Topic No. 18: Concept of Instruction set.

Topic No. 19: Explanation of the instructions of the following groups of instruction set. Data transfer group, Arithmetic Group, Logic Group, Stack, I/O and Machine Control Group.

Topic No. 20: Programming exercises in assembly language.

Unit No.5 Memories and I/O interfacing

Topic No. 21: Concept of memory mapping

Topic No. 22: partitioning of total memory space

Topic No. 23: Address decoding

Topic No. 24: concept of peripheral mapped I/O and memory mapped I/O.

Topic No. 25: Interfacing of memory mapped I/O devices

Unit No. 6 Interrupts

Topic No. 26: Concept of interrupt,

Topic No. 27: Maskable and non-maskable

Topic No. 28: Edge triggered and level triggered interrupts

Topic No. 29: Software interrupts

Topic No. 30: Restart interrupts and its use,

Topic No. 31: Various hardware interrupts of 8085

Topic No. 32: Servicing interrupts

Topic No. 33: extending interrupt system

Unit No. 7 Data Transfer Techniques

Topic No. 34: Concept of programmed I/O operations

Topic No. 35: sync data transfer

Topic No. 36: async data transfer

Topic No. 37: Interrupt driven data transfer DMA

Topic No. 38: Serial output data

Topic No. 39: Serial input data

Unit No. 8 Peripheral devices

Topic No. 40: 8255 PPI



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Topic No. 41:8253 PIT,
Topic No. 42:8257 / 8237 DMA controller,
Topic No. 43:8279 Programmable KB/Display Interface
Topic No. 44:8251 Communication Interface Adapter

STUDY SCHEME			EVALUATION SCHEME						Total Marks
			Internal Assessment		External Assessment (Examination)				
Hrs/week			Theory	Practical	Written Paper		Practical		
L	T	P	Max. Marks	Max. Marks	Max. Marks	Hrs	Max. Marks	Hrs	
4	-	-	25	-	100	3	-	-	125

RECOMMENDED BOOKS

- (1) Microprocessor Architecture, Programming and Applications with 8080/8085 by Ramesh S Gaonker, Willey Eastern Ltd. Delhi
- (2) Introduction to Microprocessor by Mathur, Tata McGraw Hill Education Pvt Ltd, New Delhi
- (3) Microprocessor and Microcontrollers by Dr BP Singh, Galgotia Publications, New Delhi
- (4) Microprocessor and Applications by Badri Ram: Tata McGraw Hill Education Pvt Ltd, New Delhi
- (5) Microprocessor and Microcomputers by Refiquzzaman, Prentice Hall of India Ltd., New Delhi.
- (6) Microprocessor programming & applications by sudhir Goyal, North Publication.
- (7) Digital Logic and Computer Design by Mano, M Morris; Prentice Hall of India, New Delhi
- (8) Digital Electronics by Rajaraman; Prentice Hall of India Ltd., New Delhi

INSTRUCTION STRATEGY

The digital systems in microprocessors have significant importance in the area of electronics. Adequate competency needs to be developed by giving sufficient practical knowledge in microprocessors (programming as well as interfacing). Help may be taken in the form of charts, simulation packages to develop clear concepts of the subject. Programming exercises other than the given in the list may be given to the students..

SUGGESTED DISTRIBUTION OF MARKS FOR FACILITATING PAPER SETTER

Sr.No.	Unit Name	Time Allotted (Hrs)	Marks Allotted (%)
1	Evolution of Microprocessor	4	5
2	Architecture of a Microprocessor (With reference to 8085)	12	20
3	Instruction Timing and Cycles	8	10
4	Programming (with respect to 8085 Microprocessor)	16	25
5	Memories and I/O interfacing	10	15
6	Interrupts	4	5
7	Data transfer techniques	4	5
8	Peripheral devices	6	15
Total		64	100



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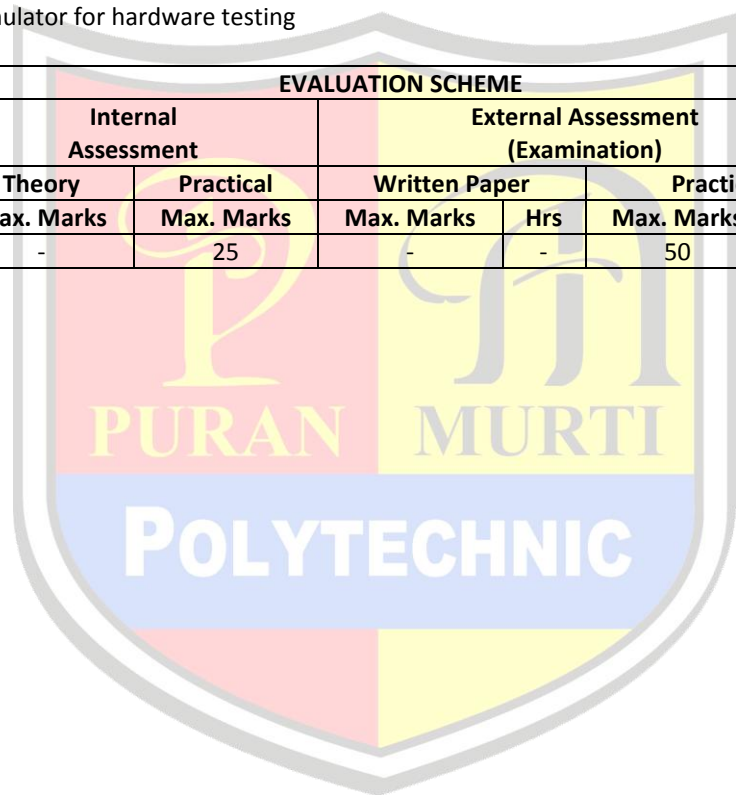
Subject: Microprocessors and Peripheral Devices (Practical)

Subject Code: 120844(P)

LIST OF PRACTICALS

1. Familiarization of different keys of 8085 microprocessor kit and its memory map
2. Steps to enter, modify data/program and to execute a programme on 8085 kit
3. Writing and execution of ALP for addition and subtraction of two 8 bit numbers
4. Writing and execution of ALP for multiplication and division of two 8 bit numbers
5. Writing and execution of ALP for arranging 10 numbers in ascending/descending order
6. Writing and execution of ALP for 0 to 9 BCD counters (up/down counter according to choice stored in memory)
7. Interfacing exercise on 8255 like LED display control
8. Interfacing exercise on 8253 programmable interval timer
9. Interfacing exercise on 8279 programmable KB/display interface like to display the hex code of key pressed on display
10. Use of 8085 emulator for hardware testing

STUDY SCHEME			EVALUATION SCHEME						Total Marks
			Internal Assessment		External Assessment (Examination)				
Hrs/week			Theory	Practical	Written Paper		Practical		
L	T	P	Max. Marks	Max. Marks	Max. Marks	Hrs	Max. Marks	Hrs	
-	-	2	-	25	-	-	50	3	75





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Subject: Electronics Design and Fabrication Techniques (Practical)

Subject Code: EDFT (P)

Detailed Contents

Unit No. 1 Electronic Design

Topic No.1: Selection and use of commonly used active and passive components

Topic No.2: Testing of active and passive components

Topic No.3: Develop skills in assembly of components, soldering, and soldering techniques Procedure for Cabinet Making

Unit No. 2 Fabrication Techniques Printed Circuit Boards (PCBs):

Topic No.4: PCB board materials, their characteristics and plating, corrosion and its prevention.

Topic No.5: Photo processing, screen printing, etching, high speed drilling, buffing, surface treatment and protection from harsh environments, plated through holes, double sided and multilayer PCBs.

Topic No.6: Standards of board sizes. Modular assemblies edge connectors, multi board racks flexible boards.

Topic No.7: Assembly of circuits on PCB, soldering techniques, role of tinning, flow and wave soldering, solder Ability, composition of solder. Edge connector. Elements of wire shaping.

Topic No.8: Storage and supply of components for assembly, role of incoming inspection of components, assembly Line reduction, tools and jigs for lead bending. Manual and automatic insertion techniques. Closed loop assembly of modules and/or complete instruments. Specific examples of small scale and large-scale production be given to illustrate above mentioned methods.

Topic No.9: Testing Jigs and fixtures for operational testing of modules / sub- assemblies. Sequence Testing for Failure, Analysis. Environmental testing at elevated temperature and Humidity. Vibration and mechanical endurance testing. Packing for transportation.

Topic No.10: Documentation Statement of brief specifications, detailed specifications and limitations. Block diagram, detailed diagrams. Testing and checking points. Warning relative to high voltage for handling during repair. Fault location guide. Simple solutions for fault removal

Topic No.11: Introduction to log books and history sheets

Unit No.3

Topic No.12: Every student must design and prepare a PCB

Topic No.13: Mount the components

Topic No.14: Assemble in a cabinet

Unit No.4 Computer Aided Design (CAD)

Topic No.15: Computer aided design of electronics circuit using different software like Eagle, ORCAD, and Circuit Maker.

Unit No. 5

Topic No.16: Production Planning

Unit NO.6

Topic No.17: CNC drilling,

Topic No.18: Photo plating,

Topic No.19: Concept of SMDs (Surface Mount Devices)



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LIST OF PROJECT

1. Regulated power supply
2. Timers using 555 and other oscillators
3. Touch plate switches – transistorized or 555 based
4. Door bell/cordless bell
5. Clapping switch and IR switch
6. Blinkers
7. Sirens and hooters
8. Single hand AM or FM
9. Electronic toy gun, walker, blinkers
10. Electronic dice
11. Cell charger, battery charger, mobile charger
12. Fire/smoke/intruder alarm
13. Liquid level controller
14. Counters
15. Combination locks
16. Electronics musical instruments
17. Telephone handset
18. Electronic Ballasts
19. Audio amplifiers
20. Tape recorders
21. Automatic stabilizer/CVT
22. Emergency light
23. Design and manufacture of transformer
24. Fan regulator
25. Dish Antenna

LIST OF RECOMMENDED BOOKS

1. Printed Circuit Board by Bosshart
2. Printed Circuit Board by RS Khandpur, Tata McGraw Hill Education Pvt Ltd., New Delhi
3. Electronics Techniques by Rajesh Kumar, NITTTR, Chandigarh.
4. Electronics Design Fabrication Techniques –H.M. RAI, Ishan Publication
5. Modular CAD for PCBs using EAGLE Software by Rajesh Kumar, NITTTR, Chandigarh
6. Electronic Manufacturing Technology by KS Jamwal, Dhanpat Rai and Sons, New Delhi

INSTRUCTIONAL STRATEGY

More emphasis may be laid on practical Project. Small industrial problems may be taken as assignments. Practical training regarding fabrication techniques using CAD may be carried out.

STUDY SCHEME			EVALUATION SCHEME						Total Marks
			Internal Assessment		External Assessment (Examination)				
Hrs/week			Theory	Practical	Written Paper		Practical		
L	T	P	Max. Marks	Max. Marks	Max. Marks	Hrs	Max. Marks	Hrs	
-	-	6	-	50	-	-	50	3	100