

DIPLOMA IN ENGG (ELECTRONICS /COMPUTER)
I-SEMESTER
ELECTRONICS DEVICES AND CIRCUITS
(COURSE NO: BLE-101)

Annexure I BOS 13.02.13

Pds/week		Duration of Exam	Max Marks			
L	P	Hours	Course Work	Mid Sem Exam	End Sem Exam	Total
4	-	3	10	15	75	100

Unit-I SEMI CONDUCTOR PHYSICS AND DIODE: 20%

1. Semiconductor Physics:

Intrinsic Semiconductors- Conductivity, atomic and crystal structure of germanium and silicon, covalent bonds, generation and recombination, effect of temperature on conductivity of intrinsic semiconductors, energy levels diagram of conductor, insulators and intrinsic semiconductors,

Extrinsic semiconductor materials- P and N type semiconductors and their conductivity, Definition of Drift and Diffusion currents.

Semiconductor Diode junction diode, mechanism of current flow in P-N junction, zener and avalanche breakdown, Semiconductor diode characteristics, static and dynamic resistances. Introduction to special purpose diodes (Zener diode, LED, photo diode, varactor diode, schotkey diode, tunnel diode)

Unit-II RECTIFIERS & WAVE –SHAPPING CIRCUIT 20%

Concept of rectification, specification of rectifier diode, single-phase half wave, full wave, bridge rectifier circuits and their operation calculations of ripple factor and rectification efficiency of rectifiers, basic concept of filtrating and filtering circuits. Working and use of voltage-doublers circuit. Basic concept of clipping and clamping circuits.

Unit-III BIPOLAR JUNCTIONTANSISTOR 20%

Concept of transistor, NPN, PNP, their construction and operations, Concept of leakage current I_{cbo} , transistor configuration (common base, common emitter and common collector), idea of their current gain and input, output characteristics.

Unit-IV FIELD EFFECT TRANSISTOR Introduction: Types of FET. Construction, operation and characteristics of JFETS. Introduction to MOSFET: Depletion type and enhancement type MOSFET, their construction and characteristics. Introduction to VMOS and CMOC. Comparisons of JFET, MOSFET, BJT 20%

Unit-V TRANSISTOR BIASING 20%

BJT BIASING: Introduction, operating point, need for stabilization of operating point Different transistor biasing circuits for fixing the operating point, bias stabilization and stability factors for various biasing circuits.

FET BIASING: Introduction, fixed bias configuration, self-bias configuration and voltage divider biasing

BOOKS RECOMMENDED

1. Electronics Devices & circuits by Bogart
2. Basic Electronics & Linear circuits by N.N Bhargava
3. Principles of Electronics by V.K Mohta.

BOOKS:

1. Electrical Technology By R.L Thereja
2. Fundamentals of Electrical Engineering. By Ashfaq Hussain, Dhanpat Rai & Co.

DIPLOMA IN ENGG(ELECTRONICS/COMPUTER)
II-SEMESTER
DIGITAL ELECTRONICS
(COURSE NO: BLE-201)

Annexure: I BOS : 13.02.2013

Pds/week		Duration of Exam	Max Marks			
L	P	Hrs	Course Work	Mid-Sem Exam	End-Sem Exam	Total
4	-	3	10	15	75	100

CONTENTS

Unit-I	NUMBER SYSTEMS & CODES Definition of digital and analog signals and systems, Review of Decimal Number System, Binary, Octal, and Hexadecimal Number Systems, Conversion of One Number System to Another, Signed numbers, 1's and 2's Complements of Binary no, Binary Arithmetic: Addition, Subtraction, Multiplication, and Division. Introduction to Digital codes.	20%
Unit-II	LOGIC GATES NOT (inverter) AND, OR, NAND, and NOR Gates, EXOR and EXNOR gates, Symbol, Truth-table of these gates, pulse waveform, Logic Gate applications, Introduction to ICs, merits and demerits of ICs over discrete circuits, Introduction to IC digital logic families, +ve and -ve Logic, Basic characteristic of IC logic families.	20%
Unit-III	BOOLEAN ALGEBRA Logic Expressions. Rules & Laws of Boolean Algebra. Demorgan's Theorems. Boolean expressions for Gate Network-SUM of PRODUCT form & PRODUCT of SUM form. Simplification of Boolean expressions. The Karnaugh Map (upto) 4-variables).	20%
Unit-IV	COMBINATIONAL LOGIC DESIGN Analysis of combinational logic Circuits, AND-OR-Invert Logic. Designing combinational logic circuits. Gate minimization using Karnaugh Map. Universal Property of NAND gate and NOR gate, NAND and NOR implementation.	20%
Unit-V	DIGITAL SYSTEM Half Adder and Full adder & their realization using combination of AND, OR, NOT, Exclusive-OR, NOR, NAND gates. Half and Full subtractors. Decoder and Encoders. Multiplexers and Demultiplexers.	20%

Books Recommended:

1. *Digital Fundamentals*, by Thomas L. Floyd, Prentice Hall Publishers.
2. *Digital Systems: Principles & Applications*, by Ronald J. Tocci, PHI Publishers.
3. *Digital Design*, by M. Morris MANO.

**DIPLOMA IN ELECTRONICS/COMPUTER ENGINEERING
III-SEMESTER
ELECTRICAL ENGINEERING
(COURSE NO: BLE -302)**

Annexure: I BOS : 13.02.2013

Pds/week		Duration of Exam Hrs	Max Marks			
L	P		Course Work	Mid-Sem Exam	End-Sem Exam	Total
4	-	3	10	15	75	100

CONTENTS

Unit-I D.C. Machine (GENERATOR AND MOTOR) 20%

Basic principle of generator, Constructional detail of D.C. generator, Derivations of emf equations, simple problems, efficiency of DC generator (simple problems), armature reaction, commutation. Working principle of D.C. motors. Starting and speed control of D.C. motors.

Unit-II TRANSFORMER 20%

Working principle, types of transformer, E.M.F. equation of transformer (simple problems), Losses, Efficiency, condition of maximum efficiency (simple problems). phasor diagram and equivalent circuit of transformer, auto transformer.

Unit-III INDUCTION MACHINES 20%

Constructional feature of single phase induction motor. Method for the self start of single phase induction motor. Split phase, shaded pole motor and their applications. Concept of rotating magnetic field.

Unit-IV SYNCHRONOUS MACHINES AND STEPPER MOTOR 20%

Method of starting of synchronous motor. Working principle, Constructional feature of Alternator. Introduction to stepper motors.

Unit-V POWER ELECTRONICS 20%

Circuit operation of characteristic of S.C.R., Triac, Diac and UJT. Controlled rectification of single phase of supply using S.C.R. D.C. to A.C. inverter.

BOOKS RECOMMENDED

- 1- Electrical Machines, by S.K. Bhattacharya, TATA McGraw Hills Pvt, Ltd. TTTI, Chandigarh.
- 2- Electrical technology, by S.L. Theraja
- 3- Fundamental of Electrical Engg, by Ashfaqe Husain

DIPLOMA IN COMPUTER/ELECTRONICS ENGINEERING
III-SEMESTER
FUNDAMENTALS OF MICROPROCESSORS
(COURSE NO: BLC-302)

Annexure: I BOS : 13.02.2013

Pds/week		Duration of Exam	Max Marks			
L	P	Hrs	Course Work	Mid-Sem Exam	End-Sem Exam	Total
4	-	3	10	15	75	100

CONTENTS

Unit-I	<p>Introduction to the Intel 8085</p> <p>Definition of Microprocessor, generation and types of microprocessor. Architecture of 8085, brief description of ALU, CPU register section date and addr. Bus time sharing 8085 CPUpins and associated signal Buffers & Latches, Demultiplexed Address & data buses.</p>	20%
Unit-II	<p>Programming The 8085</p> <p>Instruction, Group of instruction, addressing modes of Instruction, 8085 instruction set. Machine Language, comparison, Assembly Language programming (simple problem)</p>	20%
Unit-III	<p>Timing Instruction & Execution</p> <p>Machine, Diagrams for Instruction cycle, Machine cycle Read, write (IO/MEM) cycle. Timing diagram for different Instructions: Types of 8085 interrupt system, 8085 SID and SOD lines.</p>	20%
Unit-IV	<p>Peripheral Inter facing</p> <p>PLD'S Description of 8255(Mode of operation Mode 0,1,2 & BSR mode, Programing technique), 8251 Architecture -USART, Popular applications of Microprocessor in industry.</p>	20%
Unit-V	<p>I. Advanced Microprocessors</p> <p>Introduction. Intel's 8086 architecture Programming model, Brief Description of Intel's 80186/ INTEL's 80286/Intel's 80386-Architecture, memory management and programming model.</p> <p>BOOKS RECOMMENDED:</p> <p>Introduction to microprocessor, by Mathur. Microprocessor and Microcomputer by Rafquzzaman. Microprocessor Architecture, programming & Applications, by Goankar.</p>	20%

DIPLOMA IN ENGG. (ELECTRONICS/COMPUTER)

III-SEMESTER

ELECTRICAL ENGINEERING

(COURSE NO: BLE-

Annexure: I
BOS : 13.02.2013

302)

Pds/week		Duration of Exam	Max Marks			
L	P	Hrs	Course Work	Mid-Sem Exam	End-Sem Exam	Total
4	-	3	10	15	75	100

CONTENTS

D.C. Machine (GENERATOR AND MOTOR)

Unit-I

20%

Basic principle of generator, Constructional detail of D.C. generator, Derivations of emf equations, simple problems, efficiency of DC generator (simple problems), armature reaction, commutation. Working principle of D.C. motors. Starting and speed control of D.C. motors.

TRANSFORMER

Unit-II

20%

Working principle, types of transformer, E.M.F. equation of transformer (simple problems), Losses, Efficiency, condition of maximum efficiency (simple problems). phasor diagram and equivalent circuit of transformer, auto transformer.

INDUCTION MACHINES

Unit-III

20%

Constructional feature of single phase induction motor. Method for the self start of single phase induction motor. Split phase, shaded pole motor and their applications. Concept of rotating magnetic field.

SYNCHRONOUS MACHINES AND STEPPER MOTOR

Unit-IV

20%

Method of starting of synchronous motor. Working principle, Constructional feature of Alternator. Introduction to stepper motors.

POWER ELECTRONICS

Unit-V

20%

Circuit operation of characteristic of S.C.R., Triac, Diac and UJT. Controlled rectification of single phase of supply using S.C.R. D.C. to A.C. inverter.

BOOKS RECOMMENDED

- 4- Electrical Machines, by S.K. Bhattacharya, TATA McGraw Hills Pvt, Ltd. TTTI, Chandigarh.
- 5- Electrical technology, by S.L. Theraja
- 6- Fundamental of Electrical Engg, by Ashfaq Husain

DIPLOMA IN ENGG. (ELECTRONICS/COMPUTER)
III-SEMESTER
ELECTRONICS INSTRUMENTATION- I
(COURSE NO: BLE-303)

Annexure: I BOS : 13.02.2013

Pds/week		Duration of Exam	Max Marks			
L	P	Hrs	Course Work	Mid-Sem Exam	End-Sem Exam	Total
4	-	3	10	15	75	100

CONTENTS

Unit-I	ELECTRONIC VOLT OHM METERS Electronic (analog) voltmeter and multimeter block diagrams, principles of measurement of D.C. voltage, D.C. current, A.C. voltage, A.C. current and resistance, rms responding voltmeter FET input and chopper type EVMS, Typical specifications.	20%
Unit-II	CATHODE RAY OSCILLOSCOPE CRC-block diagram, CRT-associated circuits, vertical deflection system, delay line, Horizontal deflection system, Measurement of frequency, phase angle , special purpose CROs- storage, sampling Digital type, Specifications of a typical CRO.	20%
Unit-III	SIGNAL GENERATION AND ANALYSIS Sine wave generator, sweep frequency generator, pulse and square wave generator , Function generator , AF signal generator specifications. Wave analyzers, Harmonic distortion analyzers, Basic idea of spectrum analysis.	20%
Unit-IV	IMPEDANCE BRIDGES, Q-METERS AND VECTOR METERS Review of Wheatston's bridge principle and AC bridges (Induction, Capacitance, Comparison Bridge, Wein Bridge, Resonance bridge). Block diagram and working principle of Q-meter, vector impedance meter, vector voltmeter.	20%
Unit-V	DIGITAL INSTRUMENTS Digital instruments versus Analog instruments Comparison of digital and analog meters, A/D converters, D.V.M. Digital Multimeters- Typical specifications.	20%

BOOKS RECOMMENDED

1. *Electrical & Electronics Measurements*, A.K. Sawhney
2. *Electronics Instrumentation & Measuring Tech.*, Cooper & Helfric.

DIPLOMA IN ENGG. (ELECTRONICS/COMPUTER)
III-SEMESTER
PROGRAMMING IN C
(COURSE NO: BLC-301)

Pds/week		Duration of Exam	Max Marks			
L	P	Hrs	Course Work	Mid-Sem Exam	End-Sem Exam	Total
4	-	3	10	15	75	100

Annexure I
ROS

CONTENTS

Unit-I	Introduction to 'C' Programming ,Introduction to 'C', Importance of 'C' basic structure of a C program, constant variables and Data type's operator and expression, managing I/O operators.	20%
Unit-II	Jumping, Breaching and program Looping , Decision making, IF, statement and its various forms, break and continue statements, Go to statement, structured programming and avoiding goto's in "C" for, while and while do loops, Array handling in C Handling of character strings.	20%
Unit-III	DERIVED DATA TYPE IN User defined functions, their use, multiple file programs, structures and unions, simple introduction to pointers, file processing & management.	20%
Unit-IV	DATA STRUCTURE CONCEPT THROUGH 'C' Arrays, Linked Lists, sorting, searching, merging, Stack and queues, concept of trees and graphs.	20%
Unit-V	Introduction to basic Unix commands, Unix file system , program development in Unix environment, screen editing with vi editor, communication using Unix, using mail facility of Unix, simple introduction to system administration and shell programming.	20%

BOOKS RECOMMENDED

- 1- Programming in 'C' by Gotfried B.S. (Schaum's outline Series)
- 2- ANSI 'C' by Balaguruswami
- 3- 'C' by Kochen S.G.
- 4- Data structures & ALGORITHMS, by Elan Horwitz & Sartaj Satini.
- 5- Data structures Schaum's outline Series
- 6- Data structures by Tremblen J.P. & Sorenson P.G.

DIPLOMA IN ENGG. (ELECTRONICS/COMPUTER)
III-SEMESTER
FUNDAMENTALS OF MICROPROCESSORS
(COURSE NO: BLC-302)

Annexure I
BOS

Pds/week		Duration of Exam	Max Marks			
L	P	Hrs	Course Work	Mid-Sem Exam	End-Sem Exam	Total
4	-	3	10	15	75	100

CONTENTS

Introduction to the Intel 8085

Unit-I

20%

Definition of Microprocessor, generation and types of microprocessor. Architecture of 8085, brief description of ALU, CPU register section date and addr. Bus time sharing 8085 CPUpins and associated signal **Buffers & Latches, Demultiplexed Address & data buses.**

Programming The 8085

Unit-II

20%

Instruction, Group of instruction, addressing modes of Instruction, 8085 instruction set. Machine Language, comparison, Assembly Language programming (simple problem)

Timing Instruction & Execution

Unit-III

20%

Machine, **Diagrams for Instruction cycle, Machine cycle** Read, write (IO/MEM) cycle. Timing diagram for different Instructions: Types of 8085 interrupt system, 8085 SID and SOD lines.

Peripheral Inter facing

Unit-IV

20%

PLD'S Description of 8255(Mode of operation Mode 0,1,2 & BSR mode, Programing technique), **8251 Architecture** -USART, Popular applications of Microprocessor in industry.

Advanced Microprocessors

Unit-V

20%

Introduction. Intel's 8086 architecture Programming model, Brief Description of Intel's 80186/ INTEL's 80286/Intel's 80386-Architecture, memory management and programming model

BOOKS RECOMMENDED

1. Introduction to microprocessor, by Mathur.
2. Microprocessor and Microcomputer by Rafquzzaman.
3. Microprocessor Architecture, programming & Applications, by Goankar.

DIPLOMA IN ENGG. (ELECTRONICS/COMPUTER)
III-SEMESTER
COMPUTER ORGNIZATION
(COURSE NO: BLC-303)

Annexure I BOS 13.02.13

Pds/week		Duration of Exam	Max Marks			
L	P	Hrs	Course Work	Mid-Sem Exam	End-Sem Exam	Total
4	-	3	10	15	75	100

CONTENTS

Unit-I	Introduction	Importance of Computer, History of computer, Computer Generation, Types of computers, Computer Language (Machine Language, Assembly Language, and High Level Language). Basic block of a computer, central processing unit (ALU & control unit registers)	20 %
Unit-II	Memory	Computer Memory, RAM, ROM, Memory hierarchy, Cache memory, Auxiliary memory, Virtual Memory, Associative Memory.	20 %
Unit-III	PERIPHERAL DEVICES	Input devices:- key board pointing devices ,scanning devices, touch tone devices, terminal etc. Output devices: - Printers, Plotters, monitors, voice output, Add-on cards, serial and parallel ports.	20 %
Unit-IV	ARITHMATIC LOGIC & CONTROL	Design of arithmetic circuit, Design of logic circuit, Design of shifter .Introductory Concepts of Control Unit, Control organization, One flip flop per state method, Sequence and Decoder method.	20 %
Unit-V	COMPUTER ARCHITECHTURE & DESIGN	Flynns Classification of computers, Instruction execution, Concept of parallel processing & pipelining, Array processor. RISC Vs CISC, Computer Instructions, Design of simple Computer	20 %
Books Recommended:			
1. <i>Digital Fundamentals</i> , by Thomas L. Floyd, Prentice Hall Publishers.			
2. <i>Digital Systems: Principles & Applications</i> , by Ronald J. Tocci, PHI Publishers.			
3. <i>Digital Design</i> , by M. Morris MANO.			

DIPLOMA IN ENGG. (ELECTRONICS/COMPUTER)

IV-SEMESTER

ANALOG ELECTRONICS CIRCUITS

(COURSE NO: BLE-401)

Annexure I
BOS 13.02.13

Pds/week		Duration of Exam	Max Marks			
L	P	Hrs	Course Work	Mid-Sem Exam	End-Sem Exam	Total
4	-	3	10	15	75	100

CONTENTS

A.F. VOLTAGE AMPLIFIER

Unit-I General classification of amplifier, Difference between voltage and power amplifier, requirement of A.F. amplifiers. Transistor equivalent circuit and models (Basic idea only). 'h' parameters (basic concept only). RC coupled Amplifier: circuit diagram, operation, frequency response of RC coupled Amplifier at low, Mid & High Frequency, advantage and disadvantages. Transformer couple amplifier: circuit diagram, frequency response, advantages and disadvantages. 20%

A.F. POWER APMLIFIER:

Unit-II Block diagram representation of power amplifier. Class A power amplifier with direct coupled resistive load and with transformer coupled resistive load. Class B Puss Pull Amplifier: operating condition, characteristic, analysis showing cancellation of harmonic Complementary symmetry push pull amplifier, working and advantages. Darlington circuit 20%

FEED BACK AMPLIFIER AND OSCILLATORS FEED BACK AMPLIFIER:

Unit-III Definition, Basic Principles and types of feedback in amplifiers. Effect of negative feedback on gain, stability, distortion and bandwidth (only physical explanation) Types of negative feedback (negative voltage feedback and negative current feedback). gain of negative feed back amplifier. **Introduction to Multivibrator**-(Monostable, bi stable, and Astable).. 20%

Feed back oscillators. Barkhausen criterion of oscillations, Circuit diagram and working of generalized LC, RC and Wein's bridge oscillators. Principle of working and circuit of crystal oscillator.

TUNED AMPLIFIERS

Unit-IV Series and parallel resonance circuits, expression for resonant frequency, expression for impedance of resonance, relationship between resonant frequency, Q and Band width (no derivation), single and double tuned amplifiers; Their working principles and frequency response (no mathematical derivation)Problems in RF amplification, RF class C amplifier-circuit operation, efficiency, output power and distortion. (no mathematical derivation) 20%

OPERATIONAL AMPLIFIERS AND THEIR APPLICATIONS

Unit-V Characteristics of ideal operational amplifier and its block diagram, definition of inverting and non-inverting inputs, differential voltage gain, input and output voltages, input offset current, input bias current, common mode rejection ratio (CMRR), slew rate. Technique of offset removal . Use of op-amplifier as an Inverter, Scale changer, Adder, Subtractor, Differentiator, Integrator, Schmitt trigger circuit. 20%

BOOKS RECOMMENDED

1. Basic Electronics & Linear Circuit, (By N.N. Bhargava).
2. Electronic Devices and Circuits, (By Bogart)
3. Microelectronics, (By Millman)

DIPLOMA IN ENGG. (ELECTRONICS/COMPUTER)
IV-SEMESTER
DIGITAL ELECTRONICS-II
(COURSE NO: BLE-402)

Annexure I
BOS

Pds/week		Duration of Exam	Max Marks			
L	P	Hrs	Course Work	Mid-Sem Exam	End-Sem Exam	Total
4	-	3	10	15	75	100

CONTENTS

Unit-I	<p>Sequential Logic circuits</p> <p>Introduction to sequential circuits, difference between combinational logic circuit and sequential logic circuit. RS latch, Flip Flops: SR, JK, D and T flip flops. Counters: Asynchronous (any MOD) and synchronous (MOD 2ⁿ) Counters, Counter applications. SHIFT REGISTER: SISO, SIPO, PISO, PIPO, Shift register applications.</p>	20%
Unit-II	<p>D/A AND A/D CONVERTERS</p> <p>Digital and analog signal representation. D/A conversion-binary weighted resistor type, R-2R ladder type, performance characteristics of D/A converter. Application of D/A converters, A/D conversion- flash A/D converter, successive approximation type A/D converter, stair step ramp type A/D converter. Performance characteristics of A/D Converter. Application of A/D converters.</p>	20%
Unit-III	<p>LOGIC FAMILIES</p> <p>Definition of Bipolar logic family, unipolar logic family, characteristics of digital ICs, definitions of Propagation delay, fan-in, fan-out, noise immunity, power dissipation, figure of merit. Logic families: transistor-transistor logic (TTL), emitter-coupled logic (ECL), NMOS, and CMOS logic.</p>	20%
Unit-IV	<p>SEMICONDUCTOR MEMORIES</p> <p>Introduction, Classification of memories, memory organization, reading and writing, RAMs, semiconductor RAMs, static RAMs, dynamic RAMs, Non-volatile RAMs, ROM and PROM: ROM organization, ROM types, Charge coupled devices (CCD).</p>	20%
Unit-V	<p>PROGRAMMABLE LOGIC DEVICES</p> <p>Introduction to PLD, Programmable array logic (PAL), Programmable logic array (PLA) (with block diagram of PLA), applications of PLA, introduction to field programmable gate array (FPGA).</p>	20%

1. **BOOKS RECOMMENDED** *Digital Systems: Principles & Applications*, by Ronald J. Tocci, PHI Publishers.
2. *Digital Fundamentals*, by Thomas L. Floyd, Prentice Hall Publishers.
3. *Digital Integrated Electronics*, H. Taub & D. Schilling, Mc Graw Hill.

DIPLOMA IN ENGG. (ELECTRONICS/COMPUTER)
IV-SEMESTER
PRINCIPLE OF COMMUNICATION
(COURSE NO: BLE-403)

Annexure I BOS 13.02.13

Pds/week		Duration of Exam	Max Marks			
L	P	Hrs	Course Work	Mid-Sem Exam	End-Sem Exam	Total
4	-	3	10	15	75	100

CONTENTS

INTRODUCTION

Unit-I Introduction of signals and communication system, Block diagram of communication system, Different types of communication system, Transmission channel bandwidth, signal bandwidth. Various formats of binary response, Grey code. Noise and its types, SNR, Brief description of Fourier series and Fourier Transform. 20%

MODULATION AND MULTIPLEXING TECHNIQUES

Unit-II Purpose of modulation, AM & FM theory, modulation index, Analysis of AM, & FM techniques, Advantages and limitation of FM over AM, Basic concept of phase modulation, PCM techniques, Sampling and quantization. Multiplexing - needs and types (FDM & TDM). 20%

PROPAGATION OF RADIO WAVES

Unit-III Basic idea of EM waves & their characteristics, Radio communication frequencies and wavelengths, Reflection, interference & diffraction of EM waves, Definition of wavelength, field strength, multipath propagation, fading; causes and effects. 20%

IV TRANSMISSION CHANNEL

Unit-IV Transmission line, distribution constants of transmission line, infinite line and its properties, Reflection in transmission line, SWR, Line terminated with Characteristic impedance, HF radio wave propagation, Ground wave, sky wave, virtual height, Critical frequency, skip distance, MUF. 20%

ANTENNAS

Unit-V Radiation from a dipole, Resonant and non resonant. Antenna's parameters and characteristics, Radiation power, Effective Gain, Radiation pattern, Half wave dipole antenna, Folded dipole antenna, Yagi- Uda antenna, Antenna arrays. 20%

BOOKS RECOMMENDED

- Electronics communication system by George Kennedy.
- Electronics communication by Sanjeeva Gupta
- Communication system by Hykin Symom
- Modern digital & Analog communication by B.P. Lathi

DIPLOMA IN ENGG. (ELECTRONICS)
V-SEMESTER
COMMUNICATION ENGINEERING
(COURSE NO: BLE-501)

Annexure I BOS

Pds/week		Duration of Exam	Max Marks			
L	P	Hrs	Course Work	Mid-Sem Exam	End-Sem Exam	Total
4	-	3	10	15	75	100

CONTENTS

Unit-I	COMMUNICATION SYSTEM & EM WAVES: Data representation (communication codes): Signal encoding (NRZ, RZ, Manchester and Biphasic codes); Modem: Basic description with block diagram, its Needs, types of operation (Simplex, Half duplex and full duplex). Reflection and refraction, Interference-lobe and null, Introduction to dispersion and diffraction, absorption and scattering.	20%
Unit-II	OPTICAL FIBER SYSTEM: Light propagation in optical fiber; Fiber cables, Fiber characteristics and classification, Losses in optical fiber; Noise in optical fiber, optical links, Modulation methods; Brief description of light sources and photo detectors; fiber optic communication system with general Block diagram, Basic concepts of installation testing and repairs.	20%
Unit-III	SATELLITE COMMUNICATION SYSTEM I: Introduction Advantages and limitation of satellite communication, Frequency Bands Communication satellite system; Geostationary orbit; Polar Orbiting Satellites, Orbital Perturbations, Apogee and Perigee, Kepler Laws, transponders and earth stations, effect of nonspherical earth, Wideband Receiver;	20%
Unit-IV	SATELLITE COMMUNICATION SYSTEM II: Input Demultiplexer, Power Amp, EIRP, Satellite losses, Link power Budget Equation, Amplifiers in cascade, carrier to noise ratio, Saturation flux density, Intermodulation noise, Introduction : VSATs, GPS	20%
Unit-V	ERROR CONTROL CODING: Introduction, Discrete memory less channel, channel coding theorem, introduction linear block codes, systematic codes, generator matrix, parity check matrix, Hamming codes, Hamming distance, Introduction cyclic codes, generator polynomial.	20%

BOOKS RECOMMENDED

1. Data communication by P.C. Gupta.
2. Communication satellite by John Martin
3. Electronics Communication System by Kennedy & Davis.
4. Optical Communication system by J. Gower Communication System by Simon Haykin

DIPLOMA IN ENGG. (ELECTRONICS)
V-SEMESTER
AUDIO AND RADIO SYSTEMS
(COURSE NO: BLE-502)

Annexure I BOS 13.02.13

Pds/week		Duration of Exam	Max Marks			
L	P	Hrs	Course Work	Mid-Sem Exam	End-Sem Exam	Total
4	-	3	10	15	75	100

CONTENTS

Introduction to audio systems:

Unit-I Terminology: Audio, Sound absorption, absorption coefficient, loudness, pitch, octave, timbre, harmonics, echo. Definition of **Units:** phon, sone, mel. Reverberation. Velocity of sound and effect of atmosphere. Conditions for good acoustical designs of rooms, acoustic treatment materials. Constructional features, Principle of working & Characteristics of microphones (moving coil, crystal, capacitor & carbon) & loudspeakers (direct radiator & horn radiator). 20%

Audio Systems II:

Unit-II Introductory concepts of Hi-Fi Systems, Stereophonic systems, woofers, tweeters, squawker, crossover networks, dolby systems. Compact disc player, DVD., tone control, bass control, treble control, **Definitions:** compressor, limiter, expander, noise gate & equalizer (graphic & parametric) balance control, loudness control. Principle of recording & reproduction of sound on film, Basic Public Address system. 20%

Principle of Modulators and demodulators:

Unit-III Collector modulation, working of suppressed carrier balanced modulators (with derivation), Circuit & working of varactor modulator, Amrstrong phase modulator, AM diode detector, Foster Seely discriminator & Ratio detector. 20%

AM radio transmitter and receiver:

Unit-IV AM Radio, Principle of superhetrodyne reception, Block diagram & explanation of each stage of superhetrodyne receiver. Choice of intermediate frequency, image frequency, 20%

FM radio transmitter and receiver:

Unit-V Block diagram of FM transmitter and receiver. Idea of automatic frequency control, limiter, Pre Emphasis & De Emphasis. FM stereo multiplexing & demultiplexing. 20%

BOOKS RECOMMENDED

- 1- Radio Engg by G.K. Mithal published by Khanna Publishers.
- 2- Audio and video Engg System by R.G. Gupta Published by Tata Mc Grow Hill Publishing Company Ltd.

DIPLOMA IN ENGG. (ELECTRONICS)
V-SEMESTER
MOBILE COMMUNICATION
(COURSE NO: BLE-503)

Annexure I BOS 13.02.13

Pds/week		Duration of Exam	Max Marks			
L	P	Hrs	Course Work	Mid-Sem Exam	End-Sem Exam	Total
4	-	3	10	15	75	100

CONTENTS

Cellular Communication Fundamentals

Unit-I Evolution of Mobile Communication; Basic concept of cellular mobile system; Frequency reuse and channel assignment; Interference and system capacity; Hand-off strategies; Cell splitting. **20%**

Mobile Radio Propagation

Unit-II Propagation mechanism; Path-loss; Shadowing; Path-loss models; Multipath Fading; Fading characteristics; Fading parameters; Fading counter measures; Basic idea of different diversity techniques. **20%**

Modulation Techniques

Unit-III Basic Digital Modulation techniques (ASK, PSK & FSK); Quadrature Phase Shift Keying (QPSK); Minimum Shift Keying (MSK); Gaussian Minimum Shift Keying (GMSK); Orthogonal Frequency Division Multiplexing (OFDM); Spread Spectrum techniques: Direct Sequence (DS) and Frequency Hopping (FH) spread spectrum. **20%**

: Multiple Access Techniques

Unit-IV Frequency Division Multiple Access (FDMA); Time Division Multiple Access (TDMA); Code Division Multiple Access (CDMA); Space Division Multiple Access (SDMA); Hybrid Multiple Access Techniques; Capacity Comparison. **20%**

Mobile Systems and Standards

Unit-V Introduction to digital cellular system; Global System for Mobile Communication (GSM): Radio aspect; GSM services and features; CDMA cellular systems (IS-95); Introduction to Third Generation Mobile Communication System (3G) and Wireless LANs. **20%**

BOOKS RECOMMENDED

1. T. S. Rappaport, "Wireless Communications", Person Education, Inc., 2004.
2. K. Pahlavan & P. Krishnamurthy, "Principles of Wireless Networks", Pearson Education, Inc., 2004.
3. William Stallings, "Wireless Communications & Networks", Pearson Education, 2002.
4. Simon Haykin & Michael Mohar, "Modern Wireless Communications", Pearson Education, 2005.

DIPLOMA IN ENGG. (ELECTRONICS)
V-SEMESTER
NETWORKS, FILTERS & CONTROL
(COURSE NO: BLE-504)

Annexure I BOS

Pds/week		Duration of Exam	Max Marks			
L	P	Hrs	Course Work	Mid-Sem Exam	End-Sem Exam	Total
4	-	3	10	15	75	100

CONTENTS

TWO PORT NETWORK

Unit-I Two Port Network, Various Two Port circuit parameters, T and Pi Networks, Relationship between two port parameters, Interconnection of two port networks. Equivalent networks, Introduction to multiport network. 20%

INTRODUCTION TO FILTER CONCEPTS

Unit-II Categorization of filters; low pass, high pass, band pass and band reject filters, gain equalizers, delay equalizers, passive, active and other filter. 20%

IMPEDEANCE AND TRANSFER FUNCTION SYNTHESIS

Unit-III Positive real function, reactance function, driving point synthesis, Synthesis of RC, RL, and LC driving point functions, Transfer function synthesis. 20%

ACTIVE NETWORK AND FILTERS

Unit-IV Active elements, operational amplifier, negative impedance convertor, gyrator, generalized impedance converter sensitivity, single amplifier filters, low pass, high pass, band pass and band reject filter. 20%

CONTROL SYSTEMS

Unit-V Block diagram of Open loop and closed loop control system, Feedback and its effect on system performance, Stability and external disturbance, Types of Feedback control systems. Block diagram Algebra and signal flow graph. Equivalent Systems 20%

1. **BOOKS RECOMMENDED** V.K. AATRE "NETWORK THEORY AND FILTER DESIGN" WILEY EASTERN LIMITED.
2. G. DARYANANI, "PRINCIPLES OF ACTIVE NETWORK SYNTHESIS & DESIGN" JOHN WILEY & SONS.
3. Control systems by M GOPAL.

**DIPLOMA IN ENGG. (ELECTRICAL & INSTRUMENTATION /ELECTRONICS)
VI-SEMESTER
ELECTRONICS INSTRUMENTATION II
(COURSE NO: BIE-606)**

Pds/week		Duration of Exam	Max Marks			Annexure I BOS 13.02.13
L	P	Hrs	Course Work	Mid-Sem Exam	End-Sem Exam	
4	-	3	10	15	75	100

CONTENTS

SIGNAL CONDITIONING

Unit-I Signal conditioning- ac and dc signal conditioning, comparators, current-to-voltage and voltage-to-current converter, attenuators, A to D and D to A converters, instrumentation amplifiers(IA)-single op-amp and three op-amp configuration, IA specifications, application of instrumentation amplifier using transducer bridge as temp indicator. **20%**

DATA ACQUISITION SYSTEMS

Unit-II Sample-Hold circuits, multiplexing-time division and frequency division, demultiplexing, objective of a DAS, single-channel and multi-channel DAS and their configurations, Data Loggers- basic operation and block diagram. **20%**

DATA TRANSMISSION AND TELEMETERING

Unit-III Data transmission systems, advantage and disadvantages of digital transmission, pulse modulation, digital modulation, and pulse code format, modems, IEEE-488 bus, RS-232 interface, opto-isolator **20%**

DISPLSY DEVICE AND RECORDERS

Unit-IV LEDs, LCDs, seven segment and dot matrix displays, Electro luminescent, electrophoretic image and liquid vapour displays, printers- dot matrix, ink-jet, laser jet printer, recorders-potentiometric, X-Y recorders. **20%**

MISCELLANEOUS INSTRUMENTS

Unit-V Digital measurement of frequency (mains), digital measurement of high frequency, digital pH meter, digital capacitance meter, digital tachometer, measurement of power using Bolometer. **20%**

BOOKS RECOMMENDED

1. HS Kalsi, "Electronic Instrumentation," TMH, New Delhi, 1995.
2. AK Sawhney, "A Course in Electrical and Electronics Measurement and Instrumentation," Dhanpat Rai and Company, New Delhi
3. A K Ghosh, "Introduction to Instrumentation and Control," PHI, New Delhi, 2000.

**DIPLOMA IN ELECTRICAL/ DIPLOMA IN ENGG. (ELECTRICAL &
INSTRUMENTATION /ELECTRONICS)
VI-SEMESTER
ELECTRONICS INSTRUMENTATION II
(COURSE NO: BIE-606)**

Pds/week		Duration of Exam	Max Marks			Annexure I BOS 13.02.13
L	P	Hrs	Course Work	Mid-Sem Exam	End-Sem Exam	
4	-	3	10	15	75	100

CONTENTS

SIGNAL CONDITIONING

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