B.TECH SEMESTER-III
ELECTRICAL ENGINEERING

THEORY COURSES:

SI. No.	Course No.	Subject	Credits	Teaching Schedule Hrs. LTP	Total Hrs.
1.	MA-201T	Engineering Mathematics-III	4	310	4
2.	EI-201T	Analog Electronics	4	310	4
3.	EE-201T	Network Analysis & Synthesis	4	310	4
4.	EE-203T	Electrical Machines-1	4	310	4
5.	EE-205T	Electrical Measurement	4	310	4
6.	EE-207T	Electrical Engineering Materials	4	310	4
Total			**24**		**24**

LABORATORY COURSES:

SI. No.	Course No.	Subject	Credits	Teaching Schedule Hrs. LTP	Total Hrs.
1.	EE-203P	Electrical Machines-I	2	003	3
2.	EE-205P	Electrical Measurement	2	003	3
Total			**4**		**6**
TOTAL (THEORY + LABORATORY)			**28**		**30**

B.TECH SEMESTER-IV
ELECTRICAL ENGINEERING

THEORY COURSES:

SI. No.	Course No.	Subject	Credits	Teaching Schedule Hrs. LTP	Total Hrs.
1.	EI-202T	Linear Integrated Circuits	4	310	4
2.	EC-203T	Electromagnetic Theory	4	310	4
3.	EC-204T	Digital Electronics	4	310	4
4.	CS-204T	Computer Organisation	4	310	4
5.	EE-204T	Electrical Machines-II	4	310	4
6.	ME-212T	Industrial Management	4	310	4
Total			**24**		**24**

LABORATORY COURSES:

SI. No.	Course No.	Subject	Credits	Teaching Schedule Hrs. LTP	Total Hrs.
1.	EE-204P	Electrical Machines-II	2	003	3
2.	EC-204P	Digital Electronics	2	003	3
3.	EI-202P	Linear Integrated Circuit Lab	2	003	3
Total			**6**		**09**
TOTAL (THEORY + LABORATORY)			**30**		**33**

Books:

1) Thermodynamics by P.K. Nag.

2) Thermodynamic by P.L. Ballaney.

3) Engineering Mechanics & Strength of Materials by R.K.Bansal (Chapter 6, 7 & 9) Lakshmi Publications, New Delhi.

4) Holman, J.P.: Thermodynamics, MC Graw Hill book Co. NY.

5) Yadav R.: Thermodynamics and Heat Engines. Vol I & II (SI Edition) Central Publishing House Allahabad.

6) Yadav R.: Steam & Gas Turbines.

7) Engineering Mechanics by S.S. Bhavikatti & K.G. Rajashekarappa (Chapter 9 & 10) New Age Publications, New Delhi

8) F.L. Singer: Strength of Materials.

9) Timoshenko: Strength of Materials.

Subject: Analog Electronics	***Code: EI-201 T***	***Credits:4***
Branches: EC, EI,CSIT and EE	***Sem: III semester***	***L P T: 3 1 0***

Unit 1:- Transistor as an amplifier: Transistor Biasing and thermal stabilization: The operating point, Biasing Circuits, fixed bias, bias stability, self bias or emitter bias, fixing of Q-point using graphically & analytical methods, stabilization against variation in I_{CO}, V_{BE}, β: Bias compensation Diode for I_{CO}, V_{BE}.

Unit 2:- The Transistor at low frequencies: Two port devices and the hybrid model. The h-paratmeter, determination of h-parameter from input and output characteristics. Analysis of a transistor amplifier circuit using h-parameters; the emitter follower (its modelling), miller's theorem and its dual, cascading transistor amplifier (up to 2 stages), simplified hybrid model, high input resistance transistor circuit e.g. Darlington, Emitter follower.

Unit 3:- Field effect transistors: General description on FET, JFET operations, and its characteristic, MOSFET, the FET small signal model, CS and CD amplifiers at high and low frequencies.

Unit 4:- Feedback amplifiers: Classification of amplifiers, feed back concepts, transfer gain with feedback, general characteristics of negative feedback amplifier, input and output resistances for voltage series, current series, current shunt, voltage shunt feedback, analysis of feedback amplifier (voltage series, current series, current shunt, voltage shunt feedback).

Unit 1:- Power amplifier: Class A large signal amplifier, second harmonic distortion, higher order harmonic generation, the transfer audio power amplifier, efficiency, class B, class C, class AB and push-pull amplifier.

REFERENCES

1. Integrated Electronics Analog and Digital circuits and systems, J. Millman, Halkias and Prikh, TMD.

2. Electronics Devices and Circuit Theory; Robert Boylestad & Nashlasky (PHI).

3.Electronics Devices and Circuit: Allen mottershed (TMH).

B-TECH. SEMESTER-III

NETWORK ANALYSIS AND SYNTHESIS

EE-201T

FOR EE, EC & EI BRANCHES L T P TOTAL

3 1 0 4

Unit – I:

Graph Theory : Graph of a Network, definitions, tree, co tree , link, basic loop and basic cut set, Incidence matrix, cut set matrix, Tie set matrix Duality, Loop and Nodal methods of analysis.

Unit – II:

Network Theorems (Applications to ac networks): Super-position theorem, Thevenin's theorem,Norton's theorem, maximum power transfer theorem, Reciprocity theorem. Millman's theorem,compensation theorem, Tellegen's theorem.

Unit – III:

Laplace transforms: Introduction to Laplace Transform

Unit-IV:

Fourier Series: Introduction to Fourier Analysis.

Unit – V:

Network Functions : Concept of Complex frequency , Transform Impedances, Network functions of one port and two port networks, concept of poles and zeros, properties of driving point and transfer functions, time response and stability from pole zero plot.

Unit – VI :

Two Port Networks: Characterization of LTI two port networks ZY, ABCD and h parameters, reciprocity and symmetry.Inter-relationships between the parameters, inter-connections of two port networks, Ladder and Lattice networks. T & Π Representation.

Unit – VII :

(a)Network Synthesis : Positive real function; definition and properties; properties of LC, RC and RL driving point functions,synthesis of LC, RC and RL driving point immittance functions using Foster and Cauer first and second forms.

(b)Filters: Image parameters and characteristics impedance, passive and active filter fundamentals, low pass, highpass, (constant K type) filters, and introduction to active filters.

Text Books:

1. Networks and Systems, D. Roy Chowdhury, New Age International Publishers
2. Network Analysis and Synthesis, C.L. Wadhwa, New Age International Publishers
3. Circuit and Networks: Analysis and synthesis, A. Sudhakar & S.S. Palli 4th edition. Tata Mc Graw Hill Education Pvt. Ltd.
4. Circuit theory, Dr. Abhijit Chakrabarty, Dhanpat Rai & Co Pvt. Ltd.

Reference Books:

1. Network Analysis, M.E. Valkenburg, Pearson Education .
2. Fundamental of Electric circuit theory, D. Chattopadhay & P.C. Rakshit,S. Chand.
3. Engineering Circuit Analysis, W.H. Hyat, J.E. Kemmerly & S.M. Durbin, The Mc Graw Hill Company.
4. Electric Circuit, M. Nahvi & J.A. Edminister, Schum's outline series, The Mc Graw Hill Company.
5. Electric Circuit Analysis, S. Sivanagaraju, G. Kishor, C.Srinivasa Rao, Cengage Learning
6. Fundamental of Electric Circuits, Charles K. Alexander, Mathew. N.O. Sadiu, Tata Mc Graw Hill Educaton.
7. Engineering Circuit Analysis, W.H. Hayt, J.E. Kemmerly, S.M. Durbin, The Mc Graw Hill Companies
8. Introduction to Electric Circuits, Richard C. Dorf, James A. Svoboda, Wiley India Edition.

Subject: Engineering Mathematics-III ***Code: MA-201 T*** ***Credits: 4***

Branches: EC, EI EE and CSIT ***SEM: III Semester*** ***L P T: 3 1 0***

Note: A setting of eight questions will be there covering all the units proportionally out of which any five are to be attempted.

UNIT:1 **Ordinary Differential Equations:** First order equations (linear and non-linear). Linear equations of second and higher orders with constant and variable coefficients. Solution of second order equations by removing first derivative, changing of dependent and independent variables and method of variation of parameters.

UNIT:2 **Special Functions & Partial Diff. Eqns:** Power Series solutions of second order equations by frobenious method. Legendre polynomials and Berel's functions of first kind and their properties method of separation of variable for heat, wave and Laplace equations: Their solutions and related application.

UNIT:3 **Integral Transforms:** Laplace transform, existence theorem, Laplace transform of derivatives and integrals, Laplace transform of special functions. Inverse Laplace transform, convolution theorem. Applications of Laplace transform and its inverse to solve ordinary and partial differential equation.

Introduction to Fourier transforms. Fourier series, half range sine and cosine series, related applications.

References

1. J.N.Sharma: Differential Equations, Krishna Prakashan Media (P) Ltd., Meerut.
2. B.V.Raman: higher Engineering Mathematics, Tata McGraw Hill Co., Ltd., 2008.
3. R.K.Jain & S.R.K. Iyenger: Advance Engineering Mathematics, Narosa Publishing House, 2002.
4. A.R.Vashistha: Integral Transforms Krishan Prakashan Media (P) Ltd., Meerut.
5. G.G.Simmons: Differential Equations, Tata McGraw Hill Co. Ltd., 1981.

Subject: Electronic Measurement & Instrumentation ***Code: EI-203T*** ***Credits: 4***

Branches: EC,EI ***Sem: III Sem*** ***L P T: 3 1 0***

Unit 1:- Measurement & measurement system: Methods of measurement, Direct & Indirect types of measurement systems, Mechanical, Electrical: Classification of Instruments, Null type, deflection type; Mode operation: Analog, Digital.

Unit 2:- Characteristics of Instrumentation & measurement System: Static & Dynamic characteristics, Noise, Linearity hysteresis, Threshold, Dead Time & Dead Zone, Loading Effect, Input & Output Impedance.

Unit 3:- Errors in measurements

Unit 4:- Dynamic response of Instruments & measuring Systems: Dynamic response, First order system, second order System

Unit 5:- Bridges: DC Bridge-Wheatstone Bridge, Kelvin Bridge, measurement of low & High Resistance; AC Bridge-General equation of bridge balance, General form of AC Bridge, Maxwell's Bridge. Hay's Bridge, Wein Bridge, Schering Bridge.

Unit 6:- Potentiometers: DC Basic Circuit, Laboratory type, Standardization of Potentiometers; AC: Drysdale polar potentiometers, Gall-Tinsley AC Potentiometer (Working & Construction both).

Unit 7:- Analog Ammeter & Voltmeter

Unit 8:- Measurement of Power & Wattmeter: Power in DC & AC Circuit, Electrodynamometer Wattmeter, Measurement of Power in 3 Phase circuit, 3 Phase Wattmeter, Measurement refractive power.

Unit 9:- CRO: Observation of waveform on CRO, Measurement of Large & frequency (Lissajious figure).

REFERENCE BOOKS

Electronic Measurement & Instrumentation Published, Dhanpat Rai & Sons, By:- A.K. Sawhney.

B-TECH. SEMESTER-III

ELECTRICAL MACHINE-I

EE-203T

L	T	P	TOTAL
3	1	0	4

UNIT – I:

Electromechanical Energy Conversion Principles:

Principle of energy conversion.

UNIT-II:

Single Phase Transformer:

Construction & principle of ideal two winding transformer, no-load current waveform, plotting of no-load current waveform from B-H curve, phasor diagrams at no-load and at load conditions , rating, equivalent circuit ,tests, voltage regulation, losses and efficiency, auto transformer, parallel operation of single phase transformer.

UNIT-III:

Three Phase Transformer

Types of connections , 3 to 2 phase & 3 to 6 phase conversions.

UNIT-IV:

D.C. Machines:

Construction of DC Machines, Armature winding, Emf and torque equation , Armature Reaction , Commutation , Interpoles and Compensating Windings, Self excitation of shunt generator, Performance, Types & Characteristics of D.C. generators.

UNIT-V:

D.C. Machines (Contd.):-

Performance & Characteristics of D.C. motors ,Starting of D.C. motors ; 3 point and 4 point starters , Speed control of D.C. motors: Field Control , armature control and Voltage Control (Ward Leonard method); Efficiency and Testing of D.C.machines (Hopkinson's Test ,Swinburn's Test & Direct load test)

Text Books:

1. I.J. Nagrath & D.P.Kothari," Electrical Machines", Tata McGraw Hill
2 .Husain Ashfaq ," Electrical Machines", Dhanpat Rai & Sons
3 . A.E. Fitggerald, C.Kingsley Jr and Umans,"Electric Machinery" 6th Edition McGraw Hill, International Student Edition.
4 . B.R. Gupta & Vandana Singhal, "Fundamentals of Electrical Machines, New Age International.

Reference Books:

5. Irving L.Kosow, "Electric Machine and Tranformers", Prentice Hall of India.
6. M.G. Say, "The Performance and Design of AC machines", Pit man & Sons.
7 . Bhag S. Guru and Huseyin R. Hizirogulu, "Electric Machinery and Transformers" Oxford University Press, 2001.

B-TECH. SEMESTER-III

ELECTRICAL MEASUREMENT

EE-205T

L	T	P	TOTAL
3	1	0	4

UNIT I:

(1)Philosophy Of Measurement:

Methods of Measurement, Measurement System**,** Classification of instrument system, Characteristics of instruments & measurement system**,** Errors in measurement & its analysis, Standards.

(2)Analog Measurement of Electrical Quantities :

Electrodynamic ,Thermocouple, Electrostatic & Rectifier type Ammeters & Voltmeters , Electrodynamic Wattmeter, Three Phase Wattmeter, Power in three phase system , errors & remedies in wattmeter and energy meter.

UNIT II:

Instrument Transformer and their applications in the extension of instrument range, Introduction to measurement of speed, frequency and power factor.

UNIT III:

Measurement of Parameters:

Different methods of measuring low, medium and high resistances**,** measurement of inductance & capacitance with the help of AC Bridges, Q Meter.

UNIT IV:

(1) AC Potentiometer: Polar type & Co-ordinate type AC potentiometers , application of AC Potentiometers in electrical measurement

(2) Magnetic Measurement: Ballistic Galvanometer , flux meter **,** determination of hysteresis loop, measurement of iron losses**.**

Text Book:

1. E.W. Golding & F.C. Widdis, “Electrical Measurement &Measuring Instrument”, A.W. Wheeler& Co. Pvt. Ltd. India.
2. A.K. Sawhney,“Electrical & Electronic Measurement & Instrument”, Dhanpat Rai & Sons , India .

Reference Books:

3. Forest K. Harries,“Electrical Measurement”,Willey Eastern Pvt. Ltd. India .
4. M.B. Stout ,“Basic Electrical Measurement” Prentice hall of India,India.
5. W.D.Cooper,” Electronic Instrument & Measurement Technique “ Prentice Hall International.
6. Rajendra Prashad ,“Electrical Measurement &Measuring Instrument” Khanna Publisher.
7. J.B. Gupta, “Electrical Measurements and Measuring Instruments”, S.K. Kataria & Sons.

B-TECH. SEMESTER-III

ELECTRICAL ENGINEERING MATERIALS

EE-207T

L	T	P	TOTAL
3	1	0	4

UNIT – I:

Crystal Structure of Materials:

A. Bonds in solids, crystal structure, co-ordination number, atomic packing factor, Miller Indices, Bragg's law and x-ray diffraction, structural Imperfections, crystal growth

B. Energy bands in solids, classification of materials using energy band.

UNIT-II:

Dielectric Material:

Dielectric Constant, Polarization, Atomic Interpretation of Dielectric Constants of Mono-atomic Gases, Poly-Atomic Molecules & Poly-Atomic Gases, Internal Fields in Solids & Liquids, Static Dielectric Constant of Solids, Ferro-Electric Materials, Spontaneous Polarization Piezoelectricity, Frequency Dependence of Electrical Polarizability, Complex Dielectric Constant, Dielectric Relaxation, Dielectric Losses.

UNIT – III:

Conductivity of Metals:

Electron theory of metals, factors affecting electrical resistance of materials, thermal conductivity of metals, heat developed in current carrying conductors, thermoelectric effect, superconductivity and super conducting materials, Properties and applications of electrical conducting and insulating materials, mechanical properties of metals.

UNIT – IV:

Mechanism of Conduction in semiconductor materials:

Types of semiconductors, current carriers in semiconductors, Half effect, Drift and Diffusion currents, continuity equation, P-N junction diode, junction transistor, FET & IGFET, properties of semiconducting materials.

UNIT – V:

Magnetic Properties of Material:

Origin of permanent magnetic dipoles in matters, Classification Diamagnetism, Paramagnetism, Ferromagnetism,AntiferromagnetismandFerrimagnetism, magnetostriction, properties of magnetic materials, soft and hard magnetic materials, permanent magnetic materials.

Text Books :

1 A.J. Dekker,"Electrical Engineering Materials" Prentice Hall of India
2 R.K. Rajput," Electrical Engg. Materials," Laxmi Publications.
3 C.S. Indulkar & S.Triruvagdan "An Introduction to Electrical Engg. Materials, S.Chand & Co.

Reference Books :

1. Solymar, "Electrical Properties of Materials" Oxford University Press.
2. Ian P. Hones," Material Science for Electrical and Electronic Engineering," Oxford University Press.
3. G.P. Chhalotra & B.K. Bhat, "Electrical Engineering Materials" Khanna Publishers.
4. T. K. Basak, "Electrical Engineering Materials" New age International.

Subject: Electromagnetic Theory	***Code: EC-203T***	***Credits: 4***
Branches: EE	***SEM: IV Semester***	***L P T: 3 1 0***

Unit 1:- Elements of Vector Calculus: Co-ordinate system, differential volume, surface 7 line elements, gradient, divergence, curl and del-operator.

Unit 2:- Review of static electric field: Coulomb's Law, Electric field-intensity, electric flux and flux density, Gauss's Law, conservation properties of electrostatic field, electric potential, Energy and work in electric field, Current, current density and conductor capacitance & dielectric materials, polarization relative permittivity, multiple dielectric capacitors, energy stored in a capacitor.

Unit 3:- Review of magnetic field: Faraday's law, Lenz's law, bio-savart law, Ampere's law, Magnetic flux density, Vector magnetic potential, stokes theorem, magnetic force, Displacement current, self, internal and mutual inductance.

Unit 4:- Maxwell's Laplace's and Poisson's Equation and Boundary condition: Introduction and its applications.

Unit 5:- Electromagnetic waves: Introduction and solutions for partially-conducting perfect dielectric and good conductor mediums, skin depth, interface conditions ate normal incidence, oblique incidence and Snell's laws, perpendicular and parallel polarization, standing wave, power and the pointing vectors.

Unit 6:- Transmission Lines: Wave equation for ideal transmission line, characteristics impedence, propagation & reflection, VSWR, impedance, transformation, smith chart, parallel and co-axial transmission lines, Impedance Matching, single and double stub matching, impedance matching single and double slub matching, impedance measurement, Motion of charged particles in an Electric & Magnetic Field.

REFERENCES

1. Electromagnetic; john D. Kraus TMH
2. Schaum's outline series on Electromagnetic; Joseph A. Edinister ,Tata Mc Graw hill inc.
3. Engineering Electromagnetics; Haytt, Kemmerly.
4. Electromagnetic wave and radiating system; John, Balmin
5. Engineering Electromagnetics; William Haytt

Subject: Linear Integrated Circuits Code: EI-202T Credits: 4

Branches: EC, EI, and EE SEM: IV Semester L P T: 3 1 0

Unit 1:- Differential Amplifiers: Introduction, Differential amplifier circuit configuration, D.C. and A.C. analysis fo dual-input balanced output, single input-balanced output, dual input unbalanced output, single input-on balanced output, differential amplifier configuration, FET differential Amplifier, an introduction, differential amplifier with swamping resistors, cascaded differential amplifier stages, cascade or CE-CB configuration.

Unit 2:- Operational Amplifiers: Introduction, Block diagram representation of typical Op-Amplifier, level transistor stage of op-amp, transistor current mirrors and active loads, output stage of op-amp, transfer characteristic of output stage, constant current bias, Thermal stability.

Unit 3:- Interpretation of data sheets and characteristics of an op-amp: Interpreting a typical set of data sheets, electrical parameters like, input offset voltage, input offset current, input bias current, CMMR, Slew rate etc. The ideal op-amp, equivalent circuit of an op-amp, ideal voltage transfer curve, open loop op-amp. Configuration.

Unit 4:- An Op-Amp. With negative feedback: Block diagram representation o feedback configuration, voltage series and voltage shunt feedback amplifier, concentrating on voltage gain, input & output resistances, bandwidth with feedback expressions, voltage follower circuits.

Unit 5:- Frequency response of an op-Amp.: Frequency response, compensating networks, high frequency op-amp., equivalent circuit, open loop voltage gain as a function of frequency.

Unit 6:- Applications of Op-Amp. & Linear I.C.'s: Summing amplifier, scaling and averaging amplifier, instrumentation amplifier integrator, differentiator, differential amp. Realization using one and two op-amp.

(i) Active filters; Advantages of active filters over passive filters, First order low pass Butterworth filter design, Second order L.P. Butterworth filter, first and second order H.P. Butterworth filters. Higher order filtered an introduction; band pass and band reject filters. All pass filter design, introduction to oscillators.

Unit 5:- 555 timer, 566 (VCO), P.L.L., - I.C.'s

REFERENCES

1. Op-amps & linear integrated ckts by: - R.A. Gayakwad-PHI (India).
2. Operational amplifiers and linear integrated Ckts by Coughlin, Driscoll-PHI (India).
3. Linear integrated ckts by D. Roy Chaudhary, Shail Jain/New age international (P) Ltd, India.

Subject: Digital Electronics ***Code: EC-204 T*** ***Credits: 4***
Branches: EC, EI EE and CSIT ***SEM: IV Semester*** ***L P T: 3 1 0***

Unit 1:- Basic concept of Boolean algebra: Different rules for arithmetic operation, minimisation of switching functions with theorem and K-Map up to five variables, reduction techniques, prime and essential implicants, concepts of don't care condition, min. and max. Terms SOP, POS variables, entered mapping VEM, plotting & reading theory, QM methods.

Unit 2:- digital logic families: TTL, RTL, DTL, ECL, Totem pole and open collector concept, comparison of logic families.

Unit 3:- Combinational Logic: Design of combinational logic circuit using different chips/gates. Code converter: BCD-gray, excess three, encoders, decoders, multiplexers, de-multiplexers, 7-segment decoder/driver, ROM, PLA, full and half adder/subtractor, parallel adder/subtractor, look ahead carry generator, parity bit checker/generator, implementation of Boolean function with mux and decoder.

Unit 4:- Sequential logic circuit: Concept of memory storage, Latches, Flip Flops, JK, SR, T, D, Master slave, characteristic table truth table, concept of flip flop, conversion techniques, race around condition, Triggering of flip flop, classification of sequential machines, oscillators, analysis of synchronous sequential circuits, design steps for sequential circuits, state diagram, state reduction minimization of the next state decoder, o/p decoder designing.

Unit 5:- Design of single mode and multimode counter: Ripple & ring, Registers, Shift register, Shift register sequences, Ring counter using shift register and memories type of register universal and directional.

REFERENCES

1. Digital logic and computer design by MORRIS MANO (PHI)
2. Digital principles and applications by MALVING & LEACH, McGraw-Hill Book Co.
3. Fundamental of digital electronics by BARITTEE, TMH

Subject: Industrial Management	***Code: ME-212T***	***Credits 04***
Branches: EC, EI, EE, and CSIT	***Semester: IV Sem***	***LPT: 3 1 0***

1. Work study, method study & work measurement including time study, work sampling, production study, PMTS, MTM, importance of time standards, rating & allowance. Work study, incentive schemes, job description, analysis & evaluation.
2. Plant maintenance, preventive maintenance, maintenance strategy, value engineering. Ergonomics, safety health & environmental protection, work physiology job stress & fatigue, ergonomics of manual material handling.
3. Market research, principle of marketing, customers viewpoint & selective selling, functions & scope of marketing, sales forecasting techniques.
4. Performance measures of a Production system, Production, Productivity, Efficiency, Effectiveness, Quality, Flexibility, Agility etc.
5. Organization, organization structure, department on functional charts for business & industrial organization centralized & decentralized organizations, manpower planning, requirement & forecasting, recruitment training & placement.
6. Role of IT in Systems - MIS, FMS, Japanese intherenes; JIT, Kanban, Decision, Support Systems.

Text Book:

1. Engineering Management by: Fraidoon Mazda

Reference:

2. Marketing Management by: Philip Kotler

Subject: Computer Organization ***Code: CS-204 T Credits: 4***

Branches: EC, EI , CSIT ***SEM: IV Semester L P T: 3 1 0***

1.Introduction: - Review of digital logic gates, Design of adder and subtractor using gates & K-MAP, functioning of multiplexer, de-multiplexer, flip-flop.

2.Arithmetic for Computer:- Introduction to number system, negative numbers, addition & subtraction, logical operation, constructing and A.L.U., multiplications & division, floating point arithmetic.

3.Processor Design:- Processor organisation, Processor Level, information representation, instruction format, Addressing modes (Implied Mode, Immediate mode, register indirect mode, auto increment or Auto decrement mode, direct addressing mode, indirect addressing mode, relative addressing mode, index addressing mode), instruction types.

4. Control Design: - Control memory address sequencing, micro instruction interpretation, CPU control unit, basic concepts of micro programmed control, micro program sequencer for a control memory, micro instruction formats.

5.Memory Organization:- Classification memories, Memory Hierarchy, Optimization of memory hierarchy, Virtual Memory, Dynamic Address Translation Scheme addressing scheme for main memory, segmented memory system, paged segment memory, memory management policies, High speed memories, characteristics of cache memory, Cache memory organisation, Block replacement policies, interleaved memories, associated memories.

6. System Organization: - Bus arbitration, Programmed I/O (IO addressing, IO instruction), DMA (Types & procedures), interrupts (procedure, interrupt selection, vectored interrupts), Concurrency Control, System management.

REFERENCES

1. Computer Architecture and Organization, By John P. Hayes, Me Graw Hill.
2. Computer organization and design, by John L. Hennessy 7 David A. Petterson, Morgan Kaufman.
3. Computer System Architecture, by M. Morris Mano, PHI

Subject: Linear Integrated Circuit Lab ***Code: EI-202P*** ***Credits: 2***

Branches: EC, EI and EE ***SEM: IV Semester*** ***L P T: 0 0 3***

List of Experiments

1. To perform inverting, non-inverting amplifier and voltage follower using 741 IC.
2. To perform integrator and differentiator using 741.
3. To determine parameters of 741 IC a) input bias current, b) input off-set current, c) input off-set voltage d) slew rate.
4. To perform the comparator circuit using 741 IC.
5. To perform the square wave generator circuits using 741 IC.
6. To perform the Wein Bridge Oscillator circuit using 741 IC.

B-TECH. SEMESTER-IV

ELECTRICAL MACHINE-II

EE-204T

L	T	P	TOTAL
3	1	0	4

UNIT-I:

Synchronous Machine I:

Constructional features, methods of excitation, Armature winding, EMF Equation, Winding coefficients, equivalent circuit and phasor diagram, Armature reaction, O. C. & S. C. tests, Voltage Regulation using Synchronous Impedance Method, MMF Method, Potier's Triangle Method, Parallel Operation of synchronous generators, operation on infinite bus, synchronizing power and torque & power output equation.

UNIT-II:

Synchronous Machine II:

Two Reaction Theory, Power flow equations of cylindrical and salient pole machines, operating characteristics

Synchronous Motor:

Starting methods, Effect of varying field current at different loads, V- Curves, Hunting & damping, synchronous condenser

UNIT-III:

Three phase Induction Machine :

Constructional features, Rotating magnetic field, Principle of operation, Phasor diagram, equivalent circuit, torque and power equations, Torque- slip characteristics, no load & blocked rotor tests, efficiency, methods of starting, methods of speed control of induction motor: pole changing, stator voltage control, stator frequency control, cascading, V/F method of speed control, rotor voltage injection method, cogging, crawling.

Text Books:

1. D.P.Kothari & I.J.Nagrath, "Electric Machines", Tata Mc Graw Hill
2. Ashfaq Hussain"Electric Machines" Dhanpat Rai & Company
3. Fitzerald,A.E.,Kingsley and S.D.Umans"Electric Machinery", MC Graw Hill.

Reference Books:

4. P.S.Bimbhra, "Electrical Machinery", Khanna Publisher
5. P.S. Bimbhra, " Generalized Theory of Electrical Machines", Khanna Publishers
6. M.G.Say, "Alternating Current Machines",Pitman & Sons

B-TECH. SEMESTER-IV

ELEMENTS OF ELECTRICAL MACHINES

EE-202T

L	T	P	TOTAL
3	1	0	4

Branches : EC, EI & ME

UNIT-I:

TRANSFORMER:

Principle & construction of single phase transformer, EMF equation, phasor diagram, equivalent circuit diagram ,SC test, OC test, efficiency.

UNIT-II:

DC MACHINES:

Principle & construction of DC generator, types of windings, types of DC generator, OCC, load characteristics, principle & construction of DC motor, back EMF, torque equation, load characteristics.

UNIT-III:

INDUCTION MOTORS:

Principle and construction of 3-phase induction motor, concept of slip, phasor diagram. Equivalent circuit diagram, T-S characteristics.

UNIT-IV:

SYNCHRONOUS MACHINES:

Principle and construction of synchronous machines, EMF equation, OCC & SCC, synchronous impedence, principle of synchronous motor, V-curve, synchronous condenser.

Text Books:

Electrical Technology by B.L.Theraja

P.S.Bimbhra, “Electrical Machinery”, Khanna Publisher