Scheme of Studies & Examination and Syllabi for B.Tech. in Electrical Engineering according to Choice Based Credit System (CBCS)

(Semester-III to Semester-IV)

Department of Electrical Engineering
For Session 2018-19 onwards

School of Engineering & Technology

CENTRAL UNIVERSITY OF HARYANA
MAHENDERGARH-123031
HARYANA

Central University of Haryana, Mahhendergarh
B.Tech. 2nd YEAR (SEMESTER – III)
Choice Based Credit System Scheme Of Studies & Examinations w.e.f. 2019-20
(Batch 2018-19 onwards)

Sl. No.	Course Code	Course Title	Teaching Schedule			Marks of Class work	Examination Marks		Total	Credits	Duration of Exam
			L	T	P		Theory	Practical			
1	BT EE301A	Electrical Circuit Analysis	3	1	0	30	70	0	100	4	3
2	BT EE302A	Semiconductor Devices and Circuits	3	1	0	30	70	0	100	4	3
3	BT EE303A	Semiconductor Devices and Circuits Laboratory	0	0	2	30	0	70	100	1	3
4	BT EE304A	Electrical Machines-I	3	1	0	30	70	0	100	4	3
5	BT EE305A	Electrical Machines Laboratory-I	0	0	2	30	0	70	100	1	3
6	BT EE306A	Measurements and Instrumentation	3	0	0	30	70	0	100	3	3
7	BT EE307A	Measurements and Instrumentation Laboratory	0	0	2	30	0	70	100	1	3
8		GEC	3	1	0	30	70	0	100	4	3
9	BT AUD 308A	Environment Studies	3	0	0	30	70	0	100	0	3
Total			**18**	**04**	**06**	**270**	**420**	**210**	**900**	**22**	**27**

L = Lecture, T = Tutorial, P = Practical, AUD = Audit Course, & C = Credits, GEC= Generic Elective Course

NOTE: - 1. Examinees will be allowed to use only non-programmable scientific calculators in the examination. Other electronic gadgets and sharing of materials will not be permitted during the examinations.
2. GEC to be taken from other department.

Central University of Haryana, Mahhendergarh
B.Tech. 2nd YEAR (SEMESTER – IV)
Choice Based Credit System Scheme Of Studies & Examinations w.e.f. 2019-20
(Batch 2018-19 onwards)

Sl. No.	Course Code	Course Title	Teaching Schedule			Marks of Class work	Examination Marks		Total	Credits	Duration of Exam
			L	T	P		Theory	Practical			
1	BT EE401A	Logic and Sequential Circuits	3	1	0	30	70	0	100	4	3
2	BT EE402A	Logic and Sequential Circuits Laboratory	0	0	2	30	0	70	100	1	3
3	BT EE403A	Electrical Machines – II	3	1	0	30	70	0	100	4	3
4	BT EE404A	Electrical Machines Laboratory - II	0	0	2	30	0	70	100	1	3
5	BT EE405A	Power Systems – I (Apparatus and Modelling)	3	0	0	30	70	0	100	3	3
6	BT EE406A	Power Systems Laboratory - I	0	0	2	30	0	70	100	1	3
7	BT EE407A	Signals and Systems	3	0	0	30	70	0	100	3	3
8	BT EE408A	Mathematics – III (Probability and Statistics)	3	1	0	30	70	0	100	4	3
9		GEC	3	1	0	30	70	0	100	4	3
10	BT AUD 409A	Indian Constitution	3	0	0	30	70	0	100	0	3
Total			**21**	**03**	**06**	**250**	**525**	**225**	**1000**	**25**	**30**

NOTE: - 1. Examinees will be allowed to use only non-programmable scientific calculators in the examination. Other electronic gadgets and sharing of materials will not be permitted during the examinations.
2. GEC to be taken from other department

BT EE 301A **Electrical Circuit Analysis**

B.TECH. (ELECTRICAL ENGINEERING)
SEMESTER-III

L	T	P	Credits	
3	1	-	4	

Class-work Marks: 30
Exam Marks: 70
Total Marks: 100
Duration of Examination: 3 Hrs

Course Outcomes:
At the end of this course, students will demonstrate the ability to

1. Apply network theorems for the analysis of electrical circuits.
2. Obtain the transient and steady-state response of electrical circuits.
3. Analyse circuits in the sinusoidal steady-state (single-phase and three-phase).
4. Analyse two port circuit behaviour.
5.

UNIT-I

Network Theorems (10 Hours)
Superposition theorem, Thevenin theorem, Norton theorem, Maximum power transfer theorem, Reciprocity theorem, Compensation theorem. Analysis with dependent current and voltage sources. Node and Mesh Analysis. Concept of duality and dual networks.

Solution of First and Second order networks (6 Hours)
Solution of first and second order differential equations for Series and parallel R-L, R-C, R-L-C circuits, initial and final conditions in network elements, forced and free response, time constants, steady state and transient state response.

UNIT-II

Sinusoidal steady state analysis (8 Hours)
Representation of sine function as rotating phasor, phasor diagrams, impedances and admittances, AC circuit analysis, effective or RMS values, average power and complex power. series and parallel resonances, Three-phase circuits. Mutual coupled circuits, Dot Convention in coupled circuits, Ideal Transformer.

UNIT-III

Electrical Circuit Analysis Using Laplace Transforms (6 Hours)
Review of Laplace Transform, Analysis of electrical circuits using Laplace Transform for standard inputs, inverse Laplace transform, transformed network with initial conditions. Transfer function representation. Poles and Zeros. Frequency response (magnitude and phase plots),

Graph Theory (4 Hours)
Definition, Graph, Tree, Basic cut- set & tie-set matrices for planer networks-loop and nodal method of analysis of networks with independent and dependent Voltage & current source, Duality & dual networks.

UNIT-IV

Two Port Network and Network Functions (6 Hours)
Two Port Networks, terminal pairs, relationship of two port variables, impedance parameters, admittance parameters, transmission parameters and hybrid parameters, interconnections of two port networks.

Text / References:

1. M. E. Van Valkenburg, “Network Analysis”, Prentice Hall, 2006.
2. D. Roy Choudhury, “Networks and Systems”, New Age International Publications, 1998.
3. W. H. Hayt and J. E. Kemmerly, “Engineering Circuit Analysis”, McGraw Hill Education, 2013.
4. C. K. Alexander and M. N. O. Sadiku, “Electric Circuits”, McGraw Hill Education, 2004.
5. K. V. V. Murthy and M. S. Kamath, “Basic Circuit Analysis”, Jaico Publishers, 1999.

Note:

1. The paper setter will set two questions (with/without parts) from each unit, and a ninth compulsory question comprising of 6 to 10 sub parts (short questions), covering the entire syllabus. The examinee will attempt five questions in all, along with the compulsory question (with all it sub parts), selecting one question from each unit.
2. Examinees will be allowed to use only non-programmable scientific calculators in the examination. Other electronic gadgets and sharing of materials will not be permitted during the examinations.

BT EE302A Semiconductor Devices and Circuits

B.TECH. (ELECTRICAL ENGINEERING)
SEMESTER-III

L	T	P	Credits	
3	1	-	4	

Class-work Marks: 30
Exam Marks: 70
Total Marks: 100
Duration of Examination: 3 Hrs

Course Objectives:

1. To make the students understand, analyze and comprehend the electronic devices.

Course Outcomes:

At the end of this course, students will demonstrate the ability to

1. Understand the characteristics of transistors.
2. Design and analyse various rectifier and amplifier circuits.
3. Design sinusoidal and non-sinusoidal oscillators.
4. Understand the functioning of OP-AMP and design OP-AMP based circuits.

UNIT-I

Diode circuits (4 Hours)

P-N junction diode, I-V characteristics of a diode; review of half-wave and full-wave rectifiers, Zener diodes, clamping and clipping circuits.

BJT circuits (8 Hours)

Structure and I-V characteristics of a BJT; BJT as a switch. BJT as an amplifier: small-signal model, biasing circuits, common-emitter, common-base and common-collector amplifiers; Small signal equivalent circuits, high-frequency equivalent circuits, feedback amplifiers.

UNIT-II

MOSFET circuits (8 Hours)

MOSFET structure and I-V characteristics. MOSFET as a switch. MOSFET as an amplifier: small-signal model and biasing circuits, common-source, common-gate and common-drain amplifiers; small signal equivalent circuits - gain, input and output impedances, trans-conductance, high frequency equivalent circuit.

UNIT-III

Differential, multi-stage and operational amplifiers (8 Hours)

Differential amplifier; power amplifier; direct coupled multi-stage amplifier; internal structure of an operational amplifier, ideal op-amp, non-idealities in an op-amp (Output offset voltage, input bias current, input offset current, slew rate, gain bandwidth product)

UNIT-IV

Linear applications of op-amp (8 Hours)

Idealized analysis of op-amp circuits. Inverting and non-inverting amplifier, differential amplifier, instrumentation amplifier, integrator, active filter, voltage regulator, oscillators (Wein bridge and phase shift). Analog to Digital Conversion.

Nonlinear applications of op-amp (6 Hours)

Hysteretic Comparator, Zero Crossing Detector, Square-wave and triangular-wave generators, peak detector.

Text/References:

1. A. S. Sedra and K. C. Smith, “Microelectronic Circuits”, New York, Oxford University Press, 1998.
2. J. V. Wait, L. P. Huelsman and G. A. Korn, “Introduction to Operational Amplifier theory and applications”, McGraw Hill U. S., 1992.
3. J. Millman and A. Grabel, “Microelectronics”, McGraw Hill Education, 1988.
4. P. Horowitz and W. Hill, “The Art of Electronics”, Cambridge University Press, 1989.
5. P.R. Gray, R.G. Meyer and S. Lewis, “Analysis and Design of Analog Integrated Circuits”, John Wiley & Sons, 2001.

Note:

1. The paper setter will set two questions (with/without parts) from each unit, and a ninth compulsory question comprising of 6 to 10 sub parts (short questions), covering the entire syllabus. The examinee will attempt five questions in all, along with the compulsory question (with all it sub parts), selecting one question from each unit.
2. Examinees will be allowed to use only non-programmable scientific calculators in the examination. Other electronic gadgets and sharing of materials will not be permitted during the examinations.

BT EE303A Semiconductor Devices and Circuits Laboratory

B.TECH. (ELECTRICAL ENGINEERING)
SEMESTER-III

P	Credits	
2	1	Class-work Marks: 30
		Exam Marks: 70
		Total Marks: 100
		Duration of Examination: 3 Hrs

COURSE OBJECTIVE:

1. To evaluate performance characteristics of diodes, transistors, JFETs, and op-amps.
2. To have a deeper knowledge about various configuration of transistors.

LIST OF EXPERIMENTS:

1 To perform of half wave and full wave rectifier operation & to plot their waveforms.
2 Study of power supply filter.
3 To use diode as a clipper and clamper.
4 To use of zener diode as a voltage regulator.
5 To use CE amplifier for voltage, current and Power gains input, output impedances.
6 To use of CC amplifier as a buffer.
7 To plot the frequency response of RC coupled amplifier.
8 To use of transistor as a constant current source in CE configuration .
9 To study characteristics of FET.
10 To use of FET common source amplifier.
11 To use of FET common drain amplifier.
12 Graphical determination of small signal hybrid parameter of bipolar junction transistor.
13 Study and design of a DC voltage doubler.

COURSE OUTCOMES:

Through this course, the students:

1. Acquire a basic knowledge in solid state electronics including diodes, MOSFET, BJT, and operational amplifier.
2. Develop the ability to analyze and design analog electronic circuits using discrete components.
3. Observe the amplitude and frequency responses of common amplification circuits.
4. Design, construct, and take measurement of various analog circuits to compare experimental results in the laboratory with theoretical analysis.

Note:

1. At least 8 experiments are to be performed by students in the semester.
2. At least 6 experiments should be performed from the above list; remaining two experiments may either be performed from the above list or designed and set by the Dept. as per the scope of the syllabus.

BT EE304A **Electrical Machine -I**

B.TECH. (ELECTRICAL ENGINEERING)

SEMESTER-III

L	T	Credits	Class-work Marks: 30
3	1	4	Exam Marks: 70
			Total Marks: 100
			Duration of Examination: 3 Hrs

Course Objectives:

This subject aims to introduce to students to give detailed knowledge of magnetic field & magnetic circuits, DC Machines, 1-Phase and 3-Phase transformers.

Course Outcomes:

At the end of this course, students will demonstrate the ability to

- Understand the concepts of magnetic circuits.
- Understand the operation of dc machines.
- Analyse the differences in operation of different dc machine configurations.
- Analyse single phase and three phase transformers circuits.

Unit-I

Magnetic fields and magnetic circuits (5 Hours):

Review of magnetic circuits - MMF, flux, reluctance, inductance; Visualization of magnetic fields produced by a current carrying coil - through air and through a combination of iron and air; influence of highly permeable materials on the magnetic flux lines.

Electromagnetic force and torque (6 Hours):

B-H curve of magnetic materials; flux-linkage vs current characteristic of magnetic circuits; linear and nonlinear magnetic circuits; energy stored in the magnetic circuit; force as a partial derivative of stored energy with respect to position of a moving element; torque as a partial derivative of stored energy with respect to angular position of a rotating element. Singly and doubly excited electromagnetic system

Unit-II

DC Machines (10 Hours):

Basic construction of a DC machine, magnetic structure - stator yoke, stator poles, pole-faces or shoes, air gap and armature core, visualization of magnetic field produced by the field winding excitation with armature winding open, air gap flux density distribution, flux per pole, induced EMF in an armature coil. Armature winding and commutation - Elementary armature coil and commutator, lap and wave windings, construction of commutator, linear commutation, Derivation of back EMF equation, armature MMF wave, derivation of torque equation, armature reaction, air gap flux density distribution with armature reaction.

Types of field excitations - separately excited, shunt and series. Open circuit characteristic of separately excited DC generator, back EMF with armature reaction, voltage building up in a separately excited generator, critical field resistance and critical speed, V-I characteristics and torque-speed characteristics of separately excited, shunt and series motors.

Unit-III

DC machine (4 Hours):
Starting, braking and speed control of DC motors. Losses, load testing and back-to-back testing of DC machines.

Transformers (6 Hours):
Principle, construction and operation of single-phase transformers, equivalent circuit, phasor diagram, voltage regulation, losses and efficiency Testing - open circuit and short circuit tests, polarity test, back-to-back test, separation of hysteresis and eddy current losses.

Unit-IV

Transformers (10 Hours):
Autotransformers - construction, principle, applications and comparison with two winding transformer, Magnetizing current, effect of nonlinear B-H curve of magnetic core material, harmonics in magnetization current, Phase conversion - Scott connection, three-phase to six-phase conversion, Tap-changing transformers - No-load and on-load tap-changing of transformers, Three-winding transformers. Cooling of transformers, Three-phase transformer-construction, types of connection and their comparative features, Parallel operation of single-phase and three-phase transformers,

Text / References

1. A. E. Fitzgerald and C. Kingsley, "Electric Machinery", New York, McGraw Hill Education, 2013.
2. A. E. Clayton and N. N. Hancock, "Performance and design of DC machines", CBS Publishers, 2004.
3. M. G. Say, "Performance and design of AC machines", CBS Publishers, 2002.
4. P. S. Bimbhra, "Electrical Machinery", Khanna Publishers, 2011.
5. I. J. Nagrath and D. P. Kothari, "Electric Machines", McGraw Hill Education, 2010.

Note:

1. The paper setter will set two questions (with/without parts) from each unit, and a ninth compulsory question comprising of 6 to 10 sub parts (short questions), covering the entire syllabus. The examinee will attempt five questions in all, along with the compulsory question (with all it sub parts), selecting one question from each unit.
2. Examinees will be allowed to use only non-programmable scientific calculators in the examination. Other electronic gadgets and sharing of materials will not be permitted during the examinations.

BT EE305A Electrical Machine-I Laboratory

B.TECH. (ELECTRICAL ENGINEERING)
SEMESTER-III

P	Credits	Class-work Marks: 30
2	1	Exam Marks: 70
		Total Marks: 100
		Duration of Examination: 3 Hrs

LIST OF EXPERIMENT

1. To perform load test on DC shunt motor and determine performance characteristics
2. To perform load test on DC shunt generator.
3. To determine efficiency of DC shunt Machine by Hopkinson's test.
4. To perform speed control of DC shunt motor by field control and armature control method.
5. To perform Ward Leonard method of speed control of D.C. motor.
6. To find turns ratio & polarity of a 1-phase transformer.
7. To perform open & short circuit tests on a 1-phase transformer, and determine transformer parameter and efficiency at different loads.
8. To separate the hysteresis and eddy current losses of a Transformer.
9. To perform Sumpner's back to back test on 1-phase transformers.
10. To perform Parallel operation of two 1-phase transformers.
11. To perform Parallel operation of two 3-phase transformers.
12. To convert three phase to two-phase By Scott-connection.

Note:

1. At least 8 experiments are to be performed by students in the semester.
2. At least 6 experiments should be performed from the above list; remaining two experiments may either be performed from the above list or designed and set by the Dept. as per the scope of the syllabus.

BT EE306A MEASUREMENTS AND INSTRUMENTATION

B.TECH. (ELECTRICAL ENGINEERING)
SEMESTER-III

L	T	P	Credits	
3	0	-	3	Class-work Marks: 30
				Exam Marks: 70
				Total Marks: 100
				Duration of Examination: 3 Hrs

COURSE OUTCOMES:

At the end of this course, the students will be able to:

1. Learn about various measurement instruments for measurement of Voltage, Current, Power, Power Factor & Frequency, their construction, operating principle, limitations, etc.;
2. Understand statistical data analysis& errors in instruments;
3. Analyse the static characteristics of instruments
4. Understand the measurement of parameters & variables with the help of D.C. & A.C. bridges.

UNIT- I

Fundamental Concepts Relating to Measurements: Standards, True Value, Static Characteristic of Instruments (Accuracy, Precision, Resolution, Threshold, Sensitivity, Drift, Hysteresis & Dead-band, Dead Time); Classification of Instruments (Absolute & Secondary Instruments; Indicating, Recording & Integrating instruments); Generalized Instrument (Block diagram, description of blocks); Three torque in Electromechanical indicating instruments; Comparison of damping methods & their suitability; Scale information.

Errors in Measurements (Gross, Systematic, Random); Basic statistical analysis applied to measurements: Mean, standard deviation, Six-sigma estimation, C_p, C_{pk}.

UNIT- II

MEASURING INSTRUMENTS FOR VOLTAGE & CURRENT: Construction, Operating Principle, torque equation, Shape of scale, use as Ammeter or as Voltmeter (Extension of Range), Use on AC/DC or both, Advantages & disadvantages, Errors (Both on AC/DC) of PMMC types, Electrodynamic Type, Moving iron type (attraction, repulsion & combined types), & Induction type instruments

UNIT- III

WATTMETERS & ENEGRY METERS: Construction, operating principle, Torque equation, Shape of scale, Errors, Advantages & Disadvantages of Electrodynamic & Induction type Wattmeters; Single phase induction type Energy meter, Compensation & creep in energy meter.

POWER FACTOR & FREQUENCY METERS: Construction, operation, principle, Torque equation, Advantages & disadvantages of Single phase power factor meters (Electrodynamic & Moving Iron types) & Frequency meters (Electrical Resonance Type: Ferrodynamic & Electrodynamic types).

UNIT- IV

MEASUREMENT OF RESISTANCES (MEDIUM, LOW & HIGH): Voltmeter-ammeter method & Substitution Method for medium range resistance measurement; Limitations of Wheatstone bridge; Four-terminal resistance; Kelvin's double bridge method for low resistance measurement, Difficulties in high resistance measurements; Measurement of high resistance by direct deflection & loss of charge methods, Meggar.

MEASUREMENT OF INDUCTANCE (L), CAPACITANCE (C) & FREQUENCY BY A.C. BRIDGES: General balance equation, Circuit diagram, Phasor diagram, Advantages, disadvantages, applications of Maxwell's inductance-capacitance, Hays, Owens, Schering, De Sauty & Wein's bridges.

TEXT BOOK:

1. Measurements & Instrumentation by J.S. Saini; New Age Pub., N. Delhi

REFERENCE BOOKS:

1. A Course in Elect. & Electronic Measurements & Instrumentation by A. K. Sawhney; Khanna Pub.
2. Electrical Measurements by E.W. Golding & F.C. Widdis; Pub.: Reem Publications
3. Electronic & Elect. Measurement & Instrumentation by J.B. Gupta; Pub.: Kataria & Sons.
4. Electronic Instrumentation & Measurement Technique, W.D. Cooper & A.D. Helfrick; Pub.: Prentice Hall
5. Measuring Systems by Ernest O. Doebelin & Dhanesh N. Manik; Pub.: McGraw Hill.

Note:

1. The paper setter will set two questions (with/without parts) from each unit, and a ninth compulsory question comprising of 6 to 10 sub parts (short questions), covering the entire syllabus. The examinee will attempt five questions in all, along with the compulsory question (with all it sub parts), selecting one question from each unit.
2. Examinees will be allowed to use only non-programmable scientific calculators in the examination. Other electronic gadgets and sharing of materials will not be permitted during the examinations.

BT EE307A MEASUREMENTS AND INSTRUMENTATION Laboratory

B.TECH. (ELECTRICAL ENGINEERING)
SEMESTER-III

P	Credits	Class-work Marks: 30
2	1	Exam Marks: 70
		Total Marks: 100
		Duration of Examination: 3 Hrs

COURSE OUTCOMES:

At the end of this Laboratory course, the students will be able to have hands on experience of:

1. Various measuring instruments;
2. Understanding statistical data analysis & errors in instruments;
3. Measurement of power and power factor using different techniques;
4. Measurement of parameters & variables with the help of D.C. & A.C. bridges;
5. Storage & retrieval of waveforms/ data to & from DSO and computations therefrom.

LIST OF EXPERIMENTS

1. To measure the resistances of a batch of resistors (same-value by specifications) and estimate their statistical parameters (mean & standard deviation).
2. To measure inductance (L) by Maxwell's bridge and by an LCR meter.
3. To measure capacitance (C) by De-Sauty's bridge and by an LCR meter.
4. To measure frequency (f) by Wien's bridge.
5. To measure resistance of a four-terminal Low Resistance using Kelvin's double bridge.
6. To measure High resistance and Insulation resistance using Megger.
7. To use DSO for storage and retrieval of steady state periodic waveforms produced by a function generator. Consider selection of trigger source and trigger level, selection of time scale and voltage scale. Also alter bandwidth of measurement and sampling rate & record observations.
8. To Store & Retrieve one cycle of data of a periodic waveform from a DSO and use the values of data to compute RMS values using C or MATLAB program.
9. To use DSO to capture transients like step response of R-L-C circuit.
10. To effect current measurement using Shunt, C.T., and Hall sensor.
11. To measure power with the help of Wattmeter, C.T. & P.T.
12. To measure, using 2-wattmeter method, the (a) power in a balanced & an unbalanced 3-phase load (b) p.f. in a balanced 3-phase load.
13. To measure power & p.f. by 3-ammeter method.
14. To measure power & p.f. by 3-voltmeter method.

Note:

1. At least 8 experiments are to be performed by students in the semester.
2. At least 6 experiments should be performed from the above list; remaining two experiments may either be performed from the above list or designed and set by the Dept. as per the scope of the syllabus.

BT AUD308A **Environment Studies**

B.TECH. (ELECTRICAL ENGINEERING)

SEMESTER-III

L	T	P	Credits	
3	0	-	0	

Class-work Marks: 30
Exam Marks: 70
Total Marks: 100
Duration of Examination: 3 Hrs

UNIT – I

The Multidisciplinary nature of environmental studies, Definition, scope and importance. Natural Resources: Renewable and non-renewable resources: Natural resources and associated problems.

a) Forest resources: Use and over-exploitation: deforestation, case studies, Timber exploitation, mining, dams and their effects and forests tribal people.

b) Water resources: Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams-benefits and problems.

c) Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies.

d) Food resources: World food problems, changes, caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies.

e) Energy resources: Growing energy needs, renewable and non-renewable energy sources, use of alternate energy sources; case studies.

f) Land resources: Land as a resource, land degradation, man induced landslides, soil erosion and desertification.

Role of an individual in conservation of natural resources.
Equitable use of resources for sustainable lifestyles.

UNIT- II

Ecosystems: Concept of an ecosystem. Structure and function of an ecosystem. Producers, consumers and decomposers. Energy flow in the ecosystem. Ecological succession. Food chains, food webs and ecological pyramids. Introduction, types, characteristic features, structure and function of the following eco-system:

a) Forest ecosystem.
b) Grassland ecosystem.
c) Desert ecosystem.
d) Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries).

UNIT- III Biodiversity and its conservations:
Introduction – Definition: Genetic, species and ecosystem diversity.
Biogeographically classification of India. Value of biodiversity: consumptive use, productive use, social, ethical, aesthetic and option values. Biodiversity at global, National and local levels. India as a mega-diversity nation. Hot-spots of biodiversity. Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts. Endangered and endemic species of India.

UNIT – IV Environmental Pollution: Definition, causes, effects and control, measures of: a) Air pollution

b) Water pollution

c) Soil pollution
d) Marine pollution
e) Noise pollution
f) Thermal Pollution
g) Nuclear hazards

Solid waste management: Causes effects and control measures of urban and industrial wastes. Role of an individual in prevention of pollution.

Pollution case studies. Disaster management: Floods, earthquake, cyclone and landslides.

Social issues and the Environment:

a) From unsustainable to sustainable development
b) Urban problems related to energy
c) Water conservation, rain water harvesting, watershed management
d) Resettlement and rehabilitation of people; its problems and concerns, case studies
e) Environmental ethics: Issues and possible solutions
f) Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust, Case studies g) Wasteland reclamation

h) Consumerism and waste products

Text Books:

1. Bharucha, Franch, The Biodiversity of India, Mapin Publishing Pvt. Ltd., Ahmedabad – 380013, India.
2. Brunner R.C. 1989, Hazardous Waste Incineration, Mc. Graw Hill Inc. 480pp.
3. Clark R.S., Marine Pllution, Slanderson Press Oxford (TB).
4. Cunningham, W.P. Cooper, T.H. Gorhani, E & Hepworth, M.T. 2001, Environmental
5. Encyclopedia, Jaico Pub. House, Mumbai. 1195p.
6. De A.K., Environmenal Chemistry, Wiley Eastern Ltd. Down to Earth, Centre for Science and Environment ®.

Reference Books:

1. Gleick, H.P., 1993. Water in Crisis, Pacific Institute for Studies in Dev., Environment & Security, Stockholm Env. Institute, Oxford Univ., Press 473p.
2. Hawkins R.E. Encyclopedia of Indian Natural History, Bomaby Natural History Scociety,
3. Bombay (R).
4. Heywood, V.H. & Watson, R.T. 1995. Global Biodiversity Assessment. Cambridge Univ. Press
5. 1140p.
6. Jadhav, H & Bhosale, V.M. 1995, Environmental Protection and Laws, Himalaya Pub. House, 7. Helhi 284p.
8. Mckinney, M.L. & Schoch, RM 1996, Environmental Sciences Systems & Solutions, Web
9. enhanced Edition 639p

BT EE401A LOGIC AND SEQUENTIAL CIRCUITS

B.TECH. (ELECTRICAL ENGINEERING)
SEMESTER-IV

L	T	P	Credits	
3	1	-	4	

Class-work Marks: 30
Exam Marks: 70
Total Marks: 100
Duration of Examination: 3 Hrs

COURSE OBJECTIVES:

The main objective of this course is

1. To give the students basic knowledge of the logical operation and digital circuits.
2. Understanding the mathematical operations done in digital circuits.
3. To provide the understanding of data storage.
4. How decision making and other events take place in digital cicuits.

COURSE OUTCOMES:

After going through this course, the students shall be able to:

1. Understand working of logic families and logic gates.
2. Design and implement Combinational and Sequential logic circuits.
3. Understand the process of Analog to Digital conversion and Digital to Analog conversion.
4. Be able to use PLDs to implement the given logical problem.

UNIT - 1

Fundamentals of Digital Systems and logic families: Digital Signals, Digital Circuits, Logic Symbols and Truth Tables, AND, OR, NOT, NAND, NOR and Exclusive-OR Operations, Universal Gates, Boolean Algebra, Examples of IC Gates, Bases-2, 8, 10 and 16 Number Systems (Binary, Signed Binary, Octal Hexadecimal Number),Conversion from one Base to other Base, Binary Arithmetic, Addition, Subtraction, One's and Two's Complements Arithmetic, Other Binary Codes, Error Detecting and Correcting Codes, Characteristics of Digital lCs, Digital Logic Families, TTL, Schottky TTL and CMOS Logic, Interfacing CMOS and TTL, Tri-State Logic.

(10Hours)

UNIT - 2

Combinational Digital Circuits: Standard Representation for Logic Functions, Fundamental Sum of Products and Product of Sum Expressions, K-Map Representation, Simplification of Logic Functions Using K-Map, Minimization of Logical Functions. Don't care Conditions, Common Combinational Logic Circuits, Multiplexer, De-Multiplexer /Decoders, Half Adders, Full Adders, Subtractors, Binary Coded Decimal Arithmetic, Carry Look Ahead Adder, Serial Adder, Digital Comparator, Even and Odd Parity, Parity Checker/Generator, Code Converters, Priority Encoders, Decoders/Drivers for Display Devices, Q-M Method of Function Realization.

(10 Hours)

UNIT - 3

Sequential Circuits and Systems: Binary Storage Element, A 1-bit Memory, Circuit Properties of Bi-Stable Latch, Basics of Flip-flop, Flip-Flop Operation and its types, SR and Clocked SR flip flop, J- K-T and D-types Flip-Flops, Applications of Flip-Flops, Introduction to Registers, Shift Registers, Applications of Shift Registers, Serial to Parallel Converter, Parallel to Serial Converter, General form of a Sequential Circuit, Asynchronous and

synchronous Circuits, Sequence Generator, Ripple (Asynchronous) Counters, Synchronous Counters, Counters Design using Flip Flops.

(10 Hours)

UNIT - 4

A/D and D/A Converters: Digital to Analog Converters: Weighted Resistor/Converter, R-2R Ladder D/A Converter, Specifications for D/A Converters, Examples of D/A Converter lCs, Sample and Hold Circuit, Analog to Digital Converters: Quantization and Encoding, Parallel Comparator A/D Converter, Successive Approximation A/D Converter, Counting A/D Converter, Dual Slope A/D Converter, A/D Converter using Voltage to Frequency and Voltage to Time Conversion, Specifications of A/D Converters, Example of A/D Converter ICs.

(10 Hours)

TEXT/REFERENCES:

1. R. P. Jain, "Modern Digital Electronics", McGraw Hill Education, 2009.
2. M. M. Mano, "Digital logic and Computer design", Pearson Education India, 2016.
3. A. Kumar, "Fundamentals of Digital Circuits", Prentice Hall India, 2016.

Note:

1. The paper setter will set two questions (with/without parts) from each unit, and a ninth compulsory question comprising of 6 to 10 sub parts (short questions), covering the entire syllabus. The examinee will attempt five questions in all, along with the compulsory question (with all it sub parts), selecting one question from each unit.
2. Examinees will be allowed to use only non-programmable scientific calculators in the examination. Other electronic gadgets and sharing of materials will not be permitted during the examinations.

BT EE402A LOGIC AND SEQUENTIAL CIRCUITS LABORATORY

B.TECH. (ELECTRICAL ENGINEERING)
SEMESTER-IV

L	P	Credits	Class-work Marks: 30
0	2	1	Exam Marks: 70
			Total Marks: 100
			Duration of Examination: 3 Hrs

LIST OF EXPERIMENTS:

1. Study of TTL gates –AND, OR, NOT, NAND, NOR, EX-OR, EX-NOR.
2. To realize the universal property of NAND gate.
3. To realize the universal property of NOR gate.
4. Design & realize a given function using K-maps and verify its performance.
5. To verify the operation of Multiplexer & De-multiplexer.
6. To verify the operation of Comparators.
7. To perform Half adder and Full adder.
8. To perform Half Substractor and Full Substractor.
9. To verify the truth table of S-R, J-K, T & D Type flip flop.
10. To verify the operation of bi-directional shift register.
11. To study analog to digital and digital to analog converter.
12. To design & verify the operation of 3 bits' synchronous counter.
13. To design & verify the operation of synchronous UP/DOWN decade counter using JK flip flop & derive a seven segment display using the same.
14. To design & verify the operation of asynchronous UP/DOWN decade counter using JK flip flop & derive a seven segment display using the same.
15. Design a 4- bit shift register, verify its operation and verify the operation of a ring counter and a Johnson counter.
16. To implement the experiment 1 on NI ELVIS Board.
17. To implement Boolean expression on NI ELVIS Board.

Note:

1. At least 8 experiments are to be performed by students in the semester.
2. At least 6 experiments should be performed from the above list; remaining two experiments may either be performed from the above list or designed and set by the Dept. as per the scope of the syllabus.

BT EE403A ELECTRICAL MACHINE -II

B.TECH. (ELECTRICAL ENGINEERING)
SEMESTER-IV

L	T	P	Credits	
3	1	-	4	

Class-work Marks: 30
Exam Marks: 70
Total Marks: 100
Duration of Examination: 3 Hrs

Course Objectives:
This subject aims to introduce to students to give detailed knowledge of AC windings, magnetic field, various 1-Phase and 3-Phase A.C machines.

Course Outcomes:
At the end of this course, students will demonstrate the ability to
- Understand the concepts of rotating magnetic fields.
- Understand the operation of ac machines.
- Analyse performance characteristics of ac machines.

Unit-I

Fundamentals of AC machine windings (8 Hours):
Physical arrangement of windings in stator and cylindrical rotor; slots for windings; full-pitch coils, concentrated winding, distributed winding, winding axis, 3D visualization of the above winding types, Air-gap MMF distribution with fixed current through winding-concentrated and distributed, pitch factor and distribution factor

Pulsating and revolving magnetic fields (4 Hours):
Constant magnetic field, pulsating magnetic field, Magnetic field produced by a single winding - fixed current and alternating current Pulsating fields produced by spatially displaced windings, Windings spatially shifted by 90 degrees, Three windings spatially shifted by 120 degrees (carrying three-phase balanced currents), revolving magnetic field.

Unit-II

Induction Machines (10 Hours):
Construction, Types (squirrel cage, slip-ring and double cage), Torque Slip Characteristics, Starting and Maximum Torque. Equivalent circuit. Phasor Diagram, Losses and Efficiency. Effect of parameter variation on torque speed characteristics (variation of rotor and stator resistances, stator voltage, frequency). Methods of starting, braking and speed control of induction motors.

Unit-III

Induction Machines (3 Hours):
Generator operation. Types-Self-excitation, Doubly-Fed Induction Machines and their applications

Single-phase induction motors (6 Hours):
Constructional features, double revolving field theory, equivalent circuit, determination of parameters. Split-phase starting methods and applications

Unit-IV

Synchronous machines (10 Hours):

Constructional features, cylindrical rotor synchronous machine - generated EMF, equivalent circuit and phasor diagram, armature reaction, synchronous impedance, voltage regulation. characteristics of synchronous machines, V-curves. Salient pole machine - two reaction theory, analysis of phasor diagram, power angle characteristics. Parallel operation of alternators - synchronization and load division.

Text/References:

1. A. E. Fitzgerald and C. Kingsley, "Electric Machinery", McGraw Hill Education, 2013.
2. M. G. Say, "Performance and design of AC machines", CBS Publishers, 2002.
3. P. S. Bimbhra, "Electrical Machinery", Khanna Publishers, 2011.
4. I. J. Nagrath and D. P. Kothari, "Electric Machines", McGraw Hill Education, 2010.
5. A. S. Langsdorf, "Alternating current machines", McGraw Hill Education, 1984.
6. P. C. Sen, "Principles of Electric Machines and Power Electronics", John Wiley & Sons, 2007.

Note:

1. The paper setter will set two questions (with/without parts) from each unit, and a ninth compulsory question comprising of 6 to 10 sub parts (short questions), covering the entire syllabus. The examinee will attempt five questions in all, along with the compulsory question (with all it sub parts), selecting one question from each unit.
2. Examinees will be allowed to use only non-programmable scientific calculators in the examination. Other electronic gadgets and sharing of materials will not be permitted during the examinations.

BT EE404A ELECTRICAL MACHINE -II LABORATORY

B.TECH. (ELECTRICAL ENGINEERING)
SEMESTER-IV

L	P	Credits	
0	2	1	Class-work Marks: 30
			Exam Marks: 70
			Total Marks: 100
			Duration of Examination: 3 Hrs

LIST OF EXPERIMENTS:

1. To execute starting and reversing the direction of rotation of 1-Phase and 3-Phase induction motor.
2. To perform the open circuit test and block rotor test on 3 phase induction motor and determine equivalent circuit parameters.
3. To conduct the load test to determine the performance characteristics of the I.M.
4. To compute the torque v/s speed characteristics of 3-phase induction motor for various stator voltages.
5. To effect speed control of induction motor by rotor resistance control.
6. To effect speed control of 3-Phase induction motor by V/f control method.
7. To perform the open circuit test and block rotor test on single-phase induction motor and determine equivalent circuit parameters.
8. To draw Voltage Vs load Characteristics of 3 phase synchronous generator, and draw input vs. Output power.
9. To perform O.C. test on synchronous generator. And determine the full load regulation of a three phase synchronous generator by synchronous impedance method.
10. To plot V- Curve of synchronous motor.
11. To effect the parallel operation of synchronous generators.

Note:

1. At least 8 experiments are to be performed by students in the semester.
2. At least 6 experiments should be performed from the above list; remaining two experiments may either be performed from the above list or designed and set by the Dept. as per the scope of the syllabus.

BT EE405A POWER SYSTEMS-I

B.TECH. (ELECTRICAL ENGINEERING)
SEMESTER-IV

L	T	P	Credits	
3	0	-	3	

Class-work Marks: 30
Exam Marks: 70
Total Marks: 100
Duration of Examination: 3 Hrs

COURSE OBJECTIVES:

- To understand the working of different types of power generation systems
- To realize the necessity for interconnected operation of different power stations.
- Identify major components of power transmission and distribution systems.
- Describe the principle of operation of transmission and distribution equipment.
- Know and appreciate the key factors in equipment specification and network design

Course Outcomes:

Upon completion of this course, students will be able to

- Understand the major components of Transmission and Distribution Systems (TDS) and its practical significance
- Good Knowledge of various equipment specifications and design for TDS
- Awareness of latest technologies in the field of electrical transmission and distribution.
- Appreciate the different types of tariff, consumers and different types of power generation plants.
- Determine the significance of various components of the power generation plants.
- Correlate the importance of interconnected operation of different power generation systems.
- Plan an appropriate scheduling of electric power to satisfy the demand constraint

UNIT I

Hydro-electric, Thermal steam power plants, Nuclear power plants – selection of site, elements of power plant, working and classification, Renewable power plants – Solar power generation – Photo-voltaic and solar thermal generation – solar concentrators, Wind power generation – types of wind mills, wind generators, tidal, biomass, geothermal and magneto-hydro dynamic power generation, micro-hydel power plants, fuel cells and diesel and gas power plants

UNIT II

Transmission line parameters – Resistance, Inductance and Capacitance calculations – single phase and three phase lines – double circuit lines – effect of earth on transmission line capacitance Performance of transmission lines – Regulation and efficiency – Tuned power lines, Power flow through a transmission line – Power circle diagrams. Sag and tension calculation – Line supports – Insulators, Voltage distribution in suspension insulators — string efficiency – effects of wind and ice loading.

UNIT III

Introduction, arcing in circuit breakers, arc interruption theories, re-striking and recovery voltage, resistance switching, current chopping, interruption of capacitive current, oil circuit breaker, air blast circuit breakers, SF6 circuit breaker, vacuum CBs, operating mechanism, selection of circuit breakers, high voltage d.c. breakers, ratings of circuit breakers, testing of circuit breakers.

UNIT IV

Relays – General classification, Principle of operation, types, characteristics, Torque equation, Relaying Schemes, Relay Co- ordination.

Apparatus and line protection – Line Protection – Distance, Differential protection and Carrier current protection. Generator protection – protection against abnormal condition, stator and Rotor protection. Transformer Protection – Incipient fault – Differential protection, Feeder and Bus bar protection.

References

1. D. P. Kothari and IJ Nagrath, ‘Power System Engineering’, Tata Mcgraw – Hill, 2nd Edition, 2008.
2. Singh S N, ‘Electric Power Generation Transmission and distribution’, PHI India, 2nd Edition,2008
3. Chakrabarti A., Soni M.L., Gupta P.V., and Bhatnagar U.S., 'A Text Book on Power Systems Engg', Dhanpat Rai and Sons, New Delhi, 2nd Revised Edition, 2010.
4. B.R.Gupta, ‘Generation of Electrical Energy’, S. Chand Limited, 2009.
5. Wadhwa, C.L., ‘Generation Distribution and Utilisation of Electrical Energy', New Age International Publishers, 3rd Edition, 2010.
6. Mohammad Shahidehpour, Hatim Yamin, ‘Market Operations in Electric Power Systems’, John Wiley & Sons Inc., 2002.

Note:

1. The paper setter will set two questions (with/without parts) from each unit, and a ninth compulsory question comprising of 6 to 10 sub parts (short questions), covering the entire syllabus. The examinee will attempt five questions in all, along with the compulsory question (with all it sub parts), selecting one question from each unit.
2. Examinees will be allowed to use only non-programmable scientific calculators in the examination. Other electronic gadgets and sharing of materials will not be permitted during the examinations.

BT EE406A POWER SYSTEMS LABORATORY-I

B.TECH. (ELECTRICAL ENGINEERING)
SEMESTER-IV

L	T	P	Credits	
0	0	2	1	Class-work Marks: 30
				Exam Marks: 70
				Total Marks: 100
				Duration of Examination: 3 Hrs

Course Objectives

The main objective of the course is to:

1. Understand the different concepts in power systems by performing various experiments and tests in the laboratory.

List of Experiments

1. Set up on experiment to study the performance of a long transmission line under no load and under light load condition.
2. Set up on experiment kit to study the performance of a long transmission line under load at different power factors.
3. Set up on experiment kit to find out the ABCD and hybrid parameters of given transmission model.
4. Condition Monitoring of Distribution Transformer Oil Testing: Determine the strength of the given transformer oil.
5. Partial Discharge Testing: Determine the partial discharge level of the given distribution transformer as a function of voltage.
6. Voltage Regulation of a long transmission line with resistive inductive and capacitive loads.
7. Study of Thermal and Hydro power plants.
8. To determine fault current for L-G, L-L, L-L-G and L-L-L faults at the terminals of an alternator at very low excitation.
9. To study the IDMT over current relay and determine the time current characteristics.
10. To study percentage differential relay, Impedance, MHO and Reactance type distance relays.
11. To determine location of fault in a cable using cable fault locator.

Note:

1. At least 8 experiments are to be performed by students in the semester.
2. At least 6 experiments should be performed from the above list; remaining two experiments may either be performed from the above list or designed and set by the Dept. as per the scope of the syllabus.

BT EE407A SIGNAL AND SYSTEMS

B.TECH. (ELECTRICAL ENGINEERING)
SEMESTER-IV

L	P	P	Credits		
3	0	-	3	Class-work Marks	: 30
				Exam Marks	: 70
				Total Marks	: 100
				Duration of Examination	: 3 Hrs

COURSE OBJECTIVES:

The main goals of this course are:

1. To provide the basic understanding about the signals and their basic properties.
2. To give the ideas about different types of signals and systems.
3. Understanding of the signal analysis tools and conversion from one domain to the other.
4. To give the knowledge of the sampling and reconstruction of the sampled signal.

COURSE OUTCOMES:

After going through this course, the students shall be able to:

1. Understand the concepts of continuous time and discrete time systems.
2. Analyse systems in complex frequency domain.
3. Understand sampling theorem and its implications.

UNIT - I

Introduction to Signals and Systems: Signals and systems as seen in everyday life, and in various branches of engineering and science. Signal properties: periodicity, absolute integrability, deterministic and stochastic character. Some special signals of importance: the unit step, the unit impulse, the sinusoid, the complex exponential, some special time-limited signals; continuous and discrete time signals, continuous and discrete amplitude signals. System properties: linearity: additively and homogeneity, shift-invariance, causality, stability, realizability. Examples.

(10 hours)

UNIT - II

Behavior of continuous and discrete-time LTI systems: Impulse response and step response, convolution, input-output behavior with aperiodic convergent inputs, Cascade interconnections. Characterization of causality and stability of LTI systems. System representation through differential equations and difference equations. Periodic inputs to an LTI system, the notion of a frequency response and its relation to the impulse response.

(10 hours)

UNIT - III

Fourier, Laplace and z- Transforms: Fourier series representation of periodic signals, Waveform Symmetries, Calculation of Fourier Coefficients. Fourier Transform, convolution/multiplication and their effect in the frequency domain, magnitude and phase response, Fourier domain duality. The Discrete-Time Fourier Transform (DTFT) and the Discrete Fourier Transform (DFT). Parseval's Theorem. Review of the Laplace Transform for continuous time signals and systems, system functions, poles and zeros of system functions and signals, Laplace domain analysis, solution to differential equations and system behavior.

The z-Transform for discrete time signals and systems, system functions, poles and zeros of systems and sequences, z-domain analysis.

(12 hours)

UNIT - IV

Sampling and Reconstruction: The Sampling Theorem and its implications. Spectra of sampled signals. Reconstruction: ideal interpolator, zero-order hold, first-order hold. Aliasing and its effects. Relation between continuous and discrete time systems, filtering.

(8 hours)

TEXT/REFERENCES:

1. A. V. Oppenheim, A. S. Willsky and S. H. Nawab, "Signals and systems", Prentice Hall India, 1997.
2. J. G. Proakis and D. G. Manolakis, "Digital Signal Processing: Principles, Algorithms, and Applications", Pearson, 2006.
3. H. P. Hsu, "Signals and systems", Schaum's series, McGraw Hill Education, 2010.
4. S. Haykin and B. V. Veen, "Signals and Systems", John Wiley and Sons, 2007.
5. A. V. Oppenheim and R. W. Schafer, "Discrete-Time Signal Processing", Prentice Hall, 2009.
6. M. J. Robert "Fundamentals of Signals and Systems", McGraw Hill Education, 2007.
7. B. P. Lathi, "Linear Systems and Signals", Oxford University Press, 2009.

Note:

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BT EE408A Mathematics- III

B.TECH. (ELECTRICAL ENGINEERING)
SEMESTER-IV

L	T	P	Credits		
3	1	-	4	Class-work Marks	: 30
				Exam Marks	: 70
				Total Marks	: 100
				Duration of Examination	: 3 Hrs

UNIT 1

Central tendency: Mean, Mode , Median, Geometric mean, variance, standard deviation, Moments, skewness and Kurtosis;

Basic Probability: Probability spaces, conditional probability, independence, Bayes theorem; Discrete random variables, Independent random variables.

UNIT II

Expectation of discrete random variables, Correlation coefficient and rank of correlation coefficient, Chebyshev's Inequality.

Discrete probability distribution: Uniform distribution, Binomial distribution, Poisson distribution, evaluation of statistical parameters for these distributions.

UNIT III

Continuous random varibales and their properties, distribution functions and densities, normal, exponential and gamma distributions. Bivariate Distributions: Bivariate distributions and their properties, distribution of sums and quotients, conditional densities.

Curve fitting by the method of least squares- fitting of straight lines, second degree parabolas and more general curves.

UNIT IV

Test of significance: Large sample test for single proportion, difference of proportions, single mean, difference of means, and difference of standard deviations. Small Sample: Test for single mean, difference of means and correlation coefficients, test for ratio of variances - Chi-square test for goodness of fit and independence of attributes.

Text Books:

[1] S. M. Ross, *Introduction to Probability and Statistics for Engineers and Scientists*, 5 edition. Amsterdam ; Boston: Academic Press, 2014.

[2] R. E. Walpole, R. H. Myers, S. L. Myers, and K. E. Ye, *Probability and Statistics for Engineers and Scientists*, 9 edition. Pearson, 2014.

[3] S. C. Gupta and Kapoor, *Fundamentals of Mathematical Statistics*. New Delhi: Sultan Chand & Sons, 2014.

[4] J. S. Milton and J. Arnold, *Introduction to Probability and Statistics: Principles and Applications for Engineering and the Computing Sciences*, 4 edition. New Delhi; New York: McGraw Hill Education, 2017.

Reference Books:

[1] D. Wackerly, W. Mendenhall, and R. L. Scheaffer, *Mathematical Statistics with Applications*, 7 edition. Belmont, CA: Thomson Brooks/Cole, 2008.

[2] P. G. Hoel, *Introduction to Mathematical Statistics*, 5 edition. New York: Wiley, 1984.

[3] H. J. Larson, *Introduction to Probability Theory and Statistical Inference*, 3 edition. New York: John Wiley & Sons, 1982.

BT EE409A INDIAN CONSTITUTION

B.TECH. (ELECTRICAL ENGINEERING)
SEMESTER-IV

L	P	P	Credits		
3	0	-	0	Class-work Marks	: 30
				Exam Marks	: 70
				Total Marks	: 100
				Duration of Examination	: 3 Hrs

CONSTITUTION OF INDIA– BASIC FEATURES AND FUNDAMENTAL PRINCIPLES

The Constitution of India is the supreme law of India. Parliament of India can not make any law which violates the Fundamental Rights enumerated under the Part III of the Constitution. The Parliament of India has been empowered to amend the Constitution under Article 368, however, it cannot use this power to change the "basic structure" of the constitution, which has been ruled and explained by the Supreme Court of India in its historical judgments. The Constitution of India reflects the idea of "Constitutionalism" – a modern and progressive concept historically developed by the thinkers of "liberalism" – an ideology which has been recognized as one of the most popular political ideology and result of historical struggles against arbitrary use of sovereign power by state. The historic revolutions in France, England, America and particularly European Renaissance and Reformation movement have resulted into progressive legal reforms in the form of "constitutionalism" in many countries. The Constitution of India was made by borrowing models and principles from many countries including United Kingdom and America.

The Constitution of India is not only a legal document but it also reflects social, political and economic perspectives of the Indian Society. It reflects India's legacy of "diversity". It has been said that Indian constitution reflects ideals of its freedom movement, however, few critics have argued that it does not truly incorporate our own ancient legal heritage and cultural values. No law can be "static" and therefore the Constitution of India has also been amended more than one hundred times. These amendments reflect political, social and economic developments since the year 1950.

The Indian judiciary and particularly the Supreme Court of India has played an historic role as the guardian of people. It has been protecting not only basic ideals of the Constitution but also strengthened the same through progressive interpretations of the text of the Constitution. The judicial activism of the Supreme Court of India and its historic contributions has been recognized throughout the world and it gradually made it "as one of the strongest court in the world".

COURSE CONTENT

Unit-1

1. Meaning of the constitution law and constitutionalism.
2. Historical perspective of the Constitution of India.
3. Salient features and characteristics of the Constitution of India.
4. Scheme of the fundamental rights.

Unit-2

1. The scheme of the Fundamental Duties and its legal status.
2. The Directive Principles of State Policy – Its importance and implementation.
3. Federal structure and distribution of legislative and financial powers between the Union and the States.

Unit-3

1. Parliamentary Form of Government in India – The constitution powers and status of the President of India
2. Amendment of the Constitutional Powers and Procedure
3. The historical perspectives of the constitutional amendments in India
4. Emergency Provisions : National Emergency, President Rule, Financial Emergency

Unit-4

1. Local Self Government – Constitutional Scheme in India
2. Scheme of the Fundamental Right to Equality
3. Scheme of the Fundamental Right to certain Freedom under Article 19
4. Scope of the Right to Life and Personal Liberty under Article 21

REFERENCES:

1. The Constitutional Law Of India 9th Edition, by Pandey. J. N.
2. The Constitution of India by P.M.Bakshi
3. Constitution Law of India by Narender Kumar
4. Bare Act by P. M. Bakshi