

SHAMBHUNATH INSTITUTE OF ENGINEERING & TECHNOLOGY, ALLAHABAD
DEPARTMENT OF ELECTRICAL ENGINEERING
LESSON PLAN

ACADEMIC YEAR: 2017-18

DATE OF ISSUE: _Jan, 2018

SEMESTER: 1 / 2

SUBJECT: BASIC ELECTRICAL ENGINEERING
SUBJECT CODE: REE-101/ REE-201

TEACHER'S NAME: Mr. AJEET KUMAR RAWAT

UNIT WISE LECTURES: 16+17+10+10+11 = 64

UNIT	Topic	Required Lectures	Reference
1	Introductory Concepts	1	4
	Electrical Circuit Analysis: Circuit Concepts: Concepts of Network, Active and Passive elements,	1	4
	Voltage and current Sources, Concept of linearity and linear network,	1	4,1
	Unilateral and Bilateral elements, Source transformation,	2	4
	Current Divider Rule and Voltage Divider Rule	1	4,1,3
	KVL: Mesh Analysis Method.	2	1,4,3
	KCL: Nodal Analysis Method	2	1,4,3
	Star-delta transformation	1	1,4,3
	AC fundamentals: Basic Concepts about alternating current/voltage	1	4
	Average and effective values of alternating quantities, form factor and peak factor.	2	4,3
	Concept of phasors, phasor representation of sinusoidally varying voltage and current.	2	4,3
Total		16	
2	Steady-State Analysis of Single phase AC Circuits: AC Series Circuit- Purely Resistive Ckt , Inductive Ckt	1	2,1
	Purely Capacitive ckt, Series R-L ckt	2	1
	Series R-C ckt, Series R-L-C ckt	1	2
	Complex Representation of Impedance and Admittance method	1	2
	Parallel and series parallel RLC ckt,	2	2
	Resonance in series circuits	2	2
	Resonance in parallel circuits	1	1,2
	Power factor, causes and problems of low power factor, Power factor Improvement	1	1,3
	Network theorems: Superposition theorem	2	1,2,3
	Thevenin's theorem	2	1,2,3
	Norton's Theorem	1	1,2,3
	Maximum Power Transfer Theorem	1	1,2,3
Toltal		17	
3	Three Phase AC Circuits: Three phase system- its necessity and advantages, meaning of phase sequence, 3- ϕ balanced supply and balanced load	1	1,3
	3- ϕ Star connection, line and phase voltage/current relations in 3- ϕ star connected load and 3 ϕ power	1	1,3
	phase voltage/current relations in 3- ϕ delta connected load, and 3- ϕ power	1	1,3
	Power measurement in 3- ϕ load, method of power measurement,	1	1,3
	Power measurement in 3- ϕ balanced star - connected load	1	1,3
	Power measurement in 3- ϕ balanced delta - connected load	1	1,3
	Measuring Instruments: Type of instruments, essential operating torque,	1	1,3
Construction and working principles of PMMC voltmeters & ammeters,	1	1,3	

	Moving iron type voltmeters & ammeters,	1	1,3
	single phase dynamometer wattmeter, Range Extension of instrument (use of shunts and multipliers)	1	1,3
	Total	10	
4	Magnetic Circuit: Magnetic circuit concepts, analogy between electrical & magnetic circuits,	1	5,1,3
	Magnetic circuit calculations B-H curve,	1	5,1,3
	Hysteresis and Eddy current losses,	1	5,1,3
	Single phase transformer ; Principle of operation, construction,	1	5,1,3
	E.m.f equation of a transformer	2	5,1,3
	equivalent circuit, power losses,	1	5,1,3
	Efficiency of transformer	2	5,1,3
	Introduction to auto transformer.	1	1,3
	Total	10	
5	Electrical Machines: DC Machines: Principle and Construction	1	1,6,7,3
	EMF equation of dc generator	1	1,6,7,3
	Types of dc generator	1	1,6,7,3
	Torque equation of dc motor	1	1,6,7,3
	Types of dc motor	1	1,6,7,3
	Three Phase Induction Motor: Types, Construction, Principle of operation,	1	1,6,7,3
	Slip- torque characteristics, applications.	1	1,6,7,3
	Single Phase Induction Motor : Why it is not self starting Principle of Operation,	1	1,6,7,3
	Introduction to methods of starting and applications.	1	1,6,7,3
	Three Phase Synchronous Machines : Principle of operation of alternator	1	1,6,7,3
	Synchronous motor and their applications.	1	1,6,7,3
		Total	11

Reference Book — 1. A TEXTBOOK OF ELECTRICAL ENGINEERING, J.B Gupta

2. A TEXT BOOK OF ELECTRICAL TECHNOLOGY, Volume-I, B.L THERAJA & A.K THERAJA
3. ELECTRICAL ENGINEERING, U.A. BAKSHI & V.U BAKSHI
4. ABC OF ELECTRICAL ENGINEERING, B.L THERAJA & A.K THERAJA
5. ELECTRICAL ENGINEERING FUNDAMENTALS, VINCENT DEL TORO
6. PRINCIPLES OF ELECTRICAL ENGINEERING, V.K MEHTA & ROHIT MEHTA
7. BASIC ELECTRICAL ENGINEERING, ASHFAQ HUSAIN & HAROON ASHFAQ