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

ACADEMIC YEAR: 2019-20 **DATE OF ISSUE: 16 Jan, 2020**

SEMESTER: 1 / 2

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

TEACHER'S NAME: Mr. AJEET KUMAR RAWAT **UNIT WISE LECTURES: 10+16+10+12+6=54**

Module	Topic	Required Lectures
1	DC Circuits Electrical circuit elements (R, L and C)	1
	Concept of active and passive elements ,concept of linearity and linear network, unilateral and bilateral elements	1
	Voltage and current sources	2
	Kirchhoff's laws: Loop method or Mesh Current method	1
	Nodal Analysis Method	1
	Star-delta transformation	1
	Superposition theorem	1
	Thevenin theorem	1
	Norton theorem	1
	Total	10
2	Steady-State Analysis of Single phase AC Circuits: AC Series Circuit- Representation of Sinusoidal waveforms – Average and effective values, Form and peak factors	2
	Concept of phasors, phasor representation of sinusoidally varying voltage and current.	1
	AC Circuits Based on Only Resistor, Inductor, Capacitor	2
	Series R-L Circuit: Impedance Concept of-Active Power, Reactive Power, Apparent Power, Power Factor, Quality Factor	2
	Series R-C and Series R-L-C Circuit	2
	Parallel Circuits Containing Combination of R,L and C: Concept of Admittance	2
	Resonance in Series R-L-C Circuit: (Resonant Frequency, Bandwidth, Quality Factor)	2
	Resonance in Parallel R-L-C Circuit (Resonant Frequency, Bandwidth, Quality Factor)	2
	Concept of Three-phase balanced AC Circuit	1
	Types of Three-phase AC Circuit: voltage and current relation in star connection	2
	Voltage and current relation in delta connection	1
	Total	16
3	Transformers: Magnetic Materials, BH Characteristics	2
	Concept of Ideal Transformer	1
	Practical Transformer and its equivalent circuit	1
	Losses in Transformer and Efficiency of Transformer	2
	Regulation of Transformer	1
	Concept of Auto Transformer	1
	Introduction of Three-phase transformer and its connection	2
	Total	10
4	Electrical machines: Principle and Construction of DC Machine	1
	Introduction of DC generator and its emf equation	1
	Types of DC generator	1
	Introduction of DC Motor and its torque equation	1
	Types of DC Motor and its application	1
	Principle & Construction of Three-phase Induction motor and types	1

	Concept of Slip, Torque Slip Characteristics and its application	**2**
	Principle of operation of Single-phase induction motor	**1**
	Types and methods of starting of single phase induction motor	**1**
	Principle of operation of Alternator	**1**
	Principle of operation of synchronous motor and its application	**1**
	Total	**12**
5	**Electrical Installations:** **Switch Fuse Unit (SFU), MCB, ELCB, MCCB**	**2**
	Types of Wires and Cables	**1**
	Importance of earthing	**1**
	Types of Batteries, Important characteristics for Batteries, Battery backup	**1**
	Elementary calculations for energy consumption and savings	**1**
	Total	**6**

Reference Books —

1	**BASIC Electrical Engineering, Ritu Sahdev**
2	**A TEXTBOOK OF ELECTRICAL ENGINEERING, J.B Gupta**
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**
8	**A TEXT BOOK OF ELECTRICAL TECHNOLOGY, Volume-I, B.L THERAJA & A.K THERAJA**