PESIT - Bangalore South Campus

Subject : Basic Electrical Engineering

Subject Code : 17ELE25

Course Information

SL NO	TOPIC	HOUR
	Module - 1	
1	Ohm's law. Analysis of series - parallel circuits energized by indepandant voltage sources.	
2	Kirchoff's voltage and current law - Explanation	
3	Electrical work, power and energy. Illustrative examples.	
4	Numericals in Kirchoff's laws.	
5	Numericals in Kirchoff's laws.	10 Hours
6	Basics of Electromagnetism - Magnetic flux and flux density, MMF and Magnetic field intensity, Reluctanc	
7	Analogy between electrical and magnetic circuits. Faraday's laws of EMI.	
8	Fleming's RH rule, Lenz's law, Dynamically induced EMF, numericals.	
9	Statically induced EMF - Self and Mutual inductance, co-efficient of coupling, Energy stored in Magnetic fi	
10	Force on current carrying conductor, Fleming's LH rule.	
	Module - 2	
11	Working principle of DC Machine, constructional features.	
12	Types of armature windings, EMF equation of Generator, numericals	
13	Relation between induced EMF and Terminal voltage, numericals	
14	Operation of DC motor, Back emf, Torque equation.	
15	Types of DC motors	10 Hours
16	Characteristics of DC motors	
17	Significance of Back EMF, necessity of starter.	
18	Numericals on Back EMF and Torque.	
19	Construction and working principle of Dynamometer type wattmeter.	
20	Construction and working principle of Single phase induction type energy meter.	
	Module - 3	
21	Fundamentals of A.C. voltage, frequency, average value, RMS value	
22	Form factor, Peak factor, phasor representation of alternating quantities.	
23	Analysis of R,L circuits with A.C. supply.	
24	Analysis of C, series R-L circuit	
25	Analysis of R-C, R-L-C series - parallel circuits.	10 Hours
26	Real Power, Reactive Power, Apparent power, Power factor, numericals	
27	Numericals on A.C. circuits.	
28	Domestic wiring - service mains, meter and distribution board	
29	Types of wiring - Two way and Three way control of lamps.	
30	Circuit breakers - RCCB, Earthing - Pipe and Plate earthing.	
	Module - 4	
31	Three phase circuits - Definition, advantages, basic terms	
32	Relation between line and phase values of Star connected system.	
33	Relation between line and phase values of Delta connected system.	
34	Measurement of power by two wattmeter method.	
35	Determination of power factor and wattmeter readings.	10 Hours
36	Numericals	
37	Three phase synchronous generator - working and construction.	
38	Advantages of rotating field type alternator, synchronous speed.	
39	Frequency of generated voltage, EMF equation.	
40	Concept of winding factor, numericals.	

Module - 5		
41	Transformers - Necessity, principle of working.	
42	Construction of Core type and shell type transformers, EMF equation.	
43	Losses, derivation of efficiency.	
44	Condition for maximum efficiency, voltage regulation.	
45	Numericals on efficiency.	10 Hours
46	Numericals on EMF equation.	
47	Three phase induction motor - construction, principe of working.	
48	Concept of rotating magnetic field, frequency of rotor emf, synchronous speed, Slip speed.	
49	Applications of Squirrelcage and Slip ring motor. Necessity of starter.	
50	Star-Delta starter, Numericals	