

Lesson Plan

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 Discipline : Mechanical Engg.
 Semester : 3rd
 Subject : BEEE

Duration-16 weeks with effect from : 15.09.2022 (Lecture per week 3, P 2)

Week	Theory		Practical	
	Lecture Day	Topic (Including Assignment/ Test)	Practical Day	Topic
1 st	1	Unit 1. Application and Advantage of Electricity (03 Hrs) Difference between ac and dc, various applications of electricity	1 th	Introduction to BEEE Lab
	2	Advantages of electrical energy over other types of energy		
	3	Assignment		
2 nd	4	Unit 2. Basic Electrical Quantities (04 Hrs) Definition of voltage, current, power and energy with their units	2 nd	Connection of a three-phase motor and starter with fuses and reversing of direction of rotation
	5	Name of instruments used for measuring above quantities		
	6	Connection of these instruments in an electric circuit		
3 rd	7	Assignment / Test	3 rd	Connection of a single-phase induction motor with supply and reversing of its direction of rotation
	8	Unit 3. AC Fundamentals (08 Hrs) Electromagnetic induction-Faraday's Laws, Lenz's Law; Fleming's rules		
	9	Principles of a.c. Circuits; Alternating emf, Definition of cycle		
4 th	10	Frequency, amplitude and time period. Instantaneous, average, r.m.s and maximum value of sinusoidal wave	4 th	Troubleshooting in domestic wiring system, including distribution board
	11	Form factor and Peak Factor		
	12	Concept of phase and phase difference		
5 th	13	Concept of resistance, inductance and capacitance in simple a.c.	5 th	Connection and reading of an electric energy meter
	14	Power factor and improvement of power factor by use of capacitors		
	15	Concept of three phase system; star and delta connections; voltage and current relationship (no derivation)		
6 th	16	Assignment / Test	6 th	Use of ammeter, voltmeter, wattmeter, and multi-meter
	17	Unit 4. Transformers (06 Hrs) Working principle and construction of single phase transformer		
	18	transformer ratio emf equation		
7 th	19	losses and efficiency of Transformer	7 th	Measurement of power and power factor in a given single phase ac circuit
	20	Cooling of transformers, isolation transformer		
	21	CVT		

8 th	22	Auto transformer (brief idea), applications.	8 th	Study of different types of fuses, MCBs and ELCBs
	23	Unit 5. Distribution System (06 Hrs) Difference between high and low voltage distribution system		
	24	Identification of three-phase wires		
9 th	25	Neutral wire and earth wire in a low voltage distribution system	9 th	Study of zener diode as a constant voltage source and to draw its V-I characteristics
	26	Identification of voltages between phases and between one phase and neutral		
	27	Difference between three-phase and single-phase supply		
10 th	28	Unit 6. Electric Motor (08 Hrs) Description and applications of single-phase motors	10 th	Study of earthing practices
	29	Description and applications of three-phase motors		
	30	Connection and starting of three-phase induction motors by star-delta starter		
11 th	31	Changing direction of rotation of a given 3 phase induction motor	11 th	To draw V-I characteristics of a (i) NPN transistor
	32	Motors used for driving pumps, compressors		
	33	Centrifuge, dyers		
12 th	34	Totally enclosed submersible and flame proof motors	12 th	To draw V-I characteristics of a (i) thyristor (SCR)
	35	Unit 7. Domestic Installation (04 Hrs) Distinction between light-fan circuit and single phase power circuit, sub-circuits		
	36	Various accessories and parts of domestic electrical installation		
13 th	37	Identification of wiring systems.	13 th	Study of construction and working of a (i) stepper motor
	38	Common safety measures and earthing		
	39	Unit 8. Electrical Safety (04 Hrs) Electrical shock and precautions against shock, treatment of electric shock,		
14 th	40	Concept of fuses and their classification, selection and application	14 th	Study of construction and working of a (i) servo motor
	41	Concept of earthing and various types of earthing		
	42	Applications of MCBs and ELCBs		
15 th	43	Unit 9. Basic Electronics (05 Hrs) Basic idea of semiconductors – P and N type; diodes	15 th	Revision
	44	Zener diodes and their applications		
	45	Transistor – PNP and NPN, their characteristics and uses		
16 th	46	Characteristics and applications of a thyristor characteristics	16 th	Revision
	47	Characteristics and applications of stepper motors and servo motors in process control		
	48	Revision		