Lesson Plan

Name of the Faculty : Sh. Sunil Chaudhry

Discipline : Mechanical Engineering

Semester : 3rd

Subject : Basics of Electrical & Electronics Engineering (BEEE)

Lesson Plan duration : 17 weeks (15.09.2022 to 16.01.2023)

Work load per week : Lecture – 03, Practical – 02

Week	Theory		EXECUTION	
	Lecture Day	Topic (Including assessment/test)	Date	Sign.
1st	1st	Introduction about the subject & brief overview.		
	2nd	**1. Application and Advantage of Electricity:** Difference between ac and dc,		
	3rd	various applications of electricity,		
2nd	4th	Advantages of electrical energy over other types of energy.		
	5th	**2. Basic Electrical Quantities:** Definition of voltage, current with their units, Name of instruments used for measuring above quantities,		
	6th	Definition of power and energy with their units, Name of instruments used for measuring above quantities,		
3rd	7th	connection of these instruments in an electric circuit.		
	8th	**3. AC Fundamentals:** Electromagnetic induction-Faraday's Laws, Lenz's Law;		
	9th	Fleming's rules, Principles of a.c. Circuits; Alternating emf		
4th	10th	Definition of cycle, frequency, amplitude and time period.		
	11th	Instantaneous, average, r.m.s and maximum value of sinusoidal wave;		
	12th	form factor and Peak Factor. Concept of phase and phase difference.		

5th	13th	Concept of resistance, inductance and capacitance in simple a.c. circuit.		
	14th	Power factor and improvement of power factor by use of capacitors		
	15th	Concept of three phase system; star and delta connections; voltage and current relationship (no derivation)		
6th	16th	**4. Transformers:** Working principle and construction of single phase transformer, transformer ratio		
	17th	Emf equation, losses and efficiency,		
	18th	Cooling of transformers, isolation transformer,		
7th	19th	CVT, auto transformer (brief idea), applications.		
	20th	**1st sessional test (Tentative)**		
	21st	**Assessment**		
8th	22nd	**5. Distribution System:** Difference between high and low voltage distribution system,		
	23rd	Identification of three-phase wires, neutral wire and earth wire in a low voltage distribution system.		
	24th	Identification of voltages between phases and between one phase and neutral.		
9th	25th	Difference between three-phase and single-phase supply.		
	26th	**6. Electric Motor:** Description and applications of single-phase motors.		
	27th	Description and applications of three-phase motors.		
10th	28th	Connection and starting of three-phase induction motors by star-delta starter.		
	29th	Changing direction of rotation of a given 3 phase induction motor.		
	30th	Motors used for driving pumps, compressors, centrifuge, dyers etc.		

11th	31st	Totally enclosed submersible and flame proof motors.		
	32nd	**2nd sessional test (Tentative)**		
	33rd	**Assessment**		
12th	34th	**7. Domestic Installation:** Distinction between light-fan circuit and single phase power circuit, sub-circuits		
	35th	various accessories and parts of domestic electrical installation.		
	36th	Identification of wiring systems. Common safety measures and earthing.		
13th	37th	**8. Electrical Safety:** Electrical shock and precautions against shock, treatment of electric shock,		
	38th	concept of fuses and their classification, selection and application,		
	39th	Concept of earthing and various types of earthing,		
14th	40th	applications of MCBs and ELCBs.		
	41st	**9. Basic Electronics:** Basic idea of semiconductors – P and N type;		
	42nd	Diodes, zener diodes and their applications.		
15th	43rd	Transistor – PNP and NPN, their characteristics and uses.		
	44th	Characteristics and applications of a thyristor,		
	45th	characteristics and applications of stepper motors and servo motors in process control.		
16th	46th	**3rd sessional test (Tentative)**		
	47th	**Assessment**		
	48th	Revision		
17th	49th	Revision		
	50th	Revision		
	51st	Revision		

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Week			EXECUTION		
	Practical Day	Topic	G1	G2	Sign.
1st	1st	Introduction about the Lab & brief discussion over the Lab practical's to be conducted.			
2nd	2nd	Connection of a three-phase motor and starter with fuses and reversing of direction of rotation.			
3rd	3rd	Connection of a single-phase induction motor with supply and reversing of its direction of rotation.			
4th	4th	Troubleshooting in domestic wiring system, including distribution board.			
5th	5th	Connection and reading of an electric energy meter.			
6th	6th	Use of ammeter, voltmeter, wattmeter, and multi-meter.			
7th	7th	Checking of Practical file/ **1st sessional test (Tentative)**			
8th	8th	Measurement of power and power factor in a given single phase ac circuit.			
9th	9th	Study of different types of fuses, MCBs and ELCBs.			

10th	10th	Study of zener diode as a constant voltage source and to draw its V-I characteristics.			
11th	11th	Study of earthing practices			
12th	12th	Checking of Practical file/ **2nd sessional test (Tentative)**			
13th	13th	To draw V-I characteristics of a (i) NPN transistor (ii) Thyristor (SCR)			
14th	14th	Study of construction and working of a (i) stepper motor and (ii) sServo motor			
15th	15th	Checking of Practical file			
16th	16th	Checking of Practical file/ **3rd sessional test (Tentative)**			
17th	17th	Evaluation			