

LESSON PLAN	
JHARSUGUDA ENGINEERING SCHOOL, JHARSUGUDA	
Name of the Faculty: JYOTI RANJAN NAYAK	Academic Year: 2022-23
Course No.: Th-2	Course Name: ENERGY CONVERSION - II
Program: Diploma	Branch: Electrical
Year/Sem: 3 RD / V	Section:

Week No.	Period	Time (min)	Unit/Chapter	Topic to be covered	Teaching method
1 st	1.	55	1	Types of Alternator and their constructional features	Black board
	2.	55	1	Basic Working principles of Alternator and the relation between speed and frequency	Black board
	3.	55	1	Terminology in armature winding and expression for winding factors	Black board
	4.	55	1	Explain harmonics, its causes and impact on winding factor	Black board
2 nd	5.	55	1	Emf equation on Alternator and numerical solving	Black board
	6.	55	1	Explain armature reaction and its effect on emf at a different power factor of load	Black board
	7.	55	1	The vector diagram of loaded Alternator	Black board
	8.	55	1	Solving of numerical problems	Black board
	9.	55	1	Testing of Alternators.	Black board
	10.	55	1	Solving of numerical problems	Black board
	11.	55	1	Determination of voltage regulation of Alternator by direct loading and synchronous impedance method.	Black board
	12.	55	1	Solving of numerical problems	Black board
4 th	13.	55	1	Parallel operation of Alternator using synchroscope and dark and bright lamp method.	Black board
	14.	55	1	Explain distribution of load by parallel connected Alternators.	Black board
	15.	55	2	Constructional feature of synchronous motor.	Audio & Video in Smart Class
	16.	55	2	Principle of operation, concept of load angle and derivation of torque and power developed.	Black board
5 th	17.	55	2	Effect of varying load with constant excitation.	Black board
	18.	55	2	Effect of varying excitation with constant load.	Black board
	19.	55	2	Power angle characteristics of cylindrical rotor motor.	Black board
	20.	55	2	Explain effect of excitation on armature current and power factor	Black board

6 th	21.	55	2	Hunting in synchronous motor and function of damper bars.	Black board
	22.	55	2	Method of starting of synchronous motor and its application	Black board
	23.	55	3	Production of rotating magnetic field.	Audio & Video in Smart Class
	24.	55	3	Constructional feature of squirrel cage and slip ring induction motor	Black board
7 th	25.	55	3	Working principles of 3-phase induction motor and definition of slip speed, slip and relation of slip with rotor quantities	Black board
	26.	55	3	Derive expression of torque during starting and running condition and derivation of condition of maximum torque.	Black board
	27.	55	3	Solving of numerical problems.	Black board
	28.	55	3	Torque slip characteristics, derivation relation between full load torque and starting torque.	Black board
8 th	29.	55	3	Solving of numerical problems.	Black board
	30.	55	3	Establish the relation between rotor copper loss, rotor output and gross torque and relationship of slip with rotor copper loss	Black board
	31.	55	3	Solving of numerical problems.	Black board
	32.	55	3	Methods of starting and different types of starters used for 3-phase induction motor	Black board
9 th	33.	55	3	Explains speed control by voltage control, rotor resistance control, pole changing, frequency control methods	Black board
	34.	55	3	Plugging as applicable to 3-phase induction motor.	Black board
	35.	55	3	Describe different types of motor enclosures	Black board
	36.	55	3	Explain principles of induction generators and state its applications.	Black board
10 th	37.	55	4	Explains ferrari's principles.	Black board
	38.	55	4	Explain double revolving field theory and cross field theory to analyze starting torque of 1-phase induction motor.	Black board
	39.	55	4	Explain working principle, torque field characteristics, performance characteristics and application of split phase motor, capacitor start motor	Black board
	40.	55	4	Capacitor start capacitor run motor, permanent capacitor type motor	Black board

11 th	41.	55	4	Shaded pole motor	Black board
	42.	55	4	Explain the method to change the direction of rotation of above motors	Black board
	43.	55	5	Construction, working principle , running characteristics and application of 1-phase series motors	Black board
	44.	55	5	Construction, working principle and application of universal motor .	Black board
12 th	45.	55	5	Working principle of repulsion start motor	Black board
	46.	55	5	repulsion start induction run motor	Black board
	47.	55	5	repulsion induction motor.	Black board
	48.	55	6	Principle of stepper motor and classification.	Audio & Video in Smart Class
13 th	49.	55	6	Principle of variable reluctant stepper motor.	Black board
	50.	55	6	Principle of permanent magnet stepper motor.	Black board
	51.	55	6	Principle of hybrid stepper motor.	Black board
	52.	55	6	Applications of stepper motor.	Black board
14 th	53.	55	7	Explain grouping of winding, advantages	Black board
	54.	55	7	Explain parallel operation of 3- phase transformers	Audio & Video in Smart Class
	55.	55	7	Explain tap changer (on / off load tap changing)	Black board
	56.	55	7	Maintenance schedule of power transformer.	Black board
15 th	57.	55		Revision of all topics	Black board
	58.	55		Revision of all topics	Black board
	59.	55		Semester Question and Answer discussion	Black board
	60.	55		Semester Question and Answer discussion	Black board

Text Book:

1. Electrical Technology – II , B.L. Therja & A.K. Therja , S.Chand Publication
2. Text book of Electrical machines , K.R. Siddhapurah , D.B. Raval , Vikash publication
3. Electrical Technology , J.B. Gupta, S.K. Kataria & Sons
4. Electrical machines Asfaq Hussain , Dhanpat Rai & Sons Publication.
5. Electrical Machine S.K. Bhattacharya , TMH
6. Electrical Machines D.P. Kothari, I.J. Nagrath , MC Grawhill