LESSON PLAN

SUB: ENERGY CONVERSION - II

BRANCH:- ELECTRICAL ENGG.

SEMESTER: 5th

SESSION:2024-2025

NAME OF FACULTY: NIBEDITA HO

GOVERNMENT POLYTECHNIC, BHADRAK

Hod ,Electrical -24

HOD (ELECT.)
G.P.BHADRAK

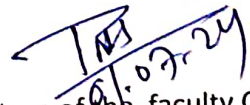Academic Co-ordinator

Academic Co-ordinator

Principal
Govt. Polytechnic, Bhadrak

Principal
Govt.Polytechnic
Bhadrak

Discipline: Electrical Engg.	Semester: 5th	Name of the Teaching Faculty : Nibedita Ho
Subject: Energy Conversion - II	No. of Days/per week class allotted:4	Semester from date: 01.07.2024 to 08.11.2024 No. of Weeks:15
Week	Class Day	Theory
1st	1st	Production of rotating magnetic field.
	2nd	Constructional feature of Squirrel cage and Slipring induction motors.
	3rd	Working principles of operation of 3-phaseInduction motor.
	4th	Define slip speed, slip and establish the relationof slip with rotor quantities.
2nd	1st	Derive expression for torque during starting andrunning conditions and derive conditions for maximum torque. (numerical problems)
	2nd	Torque-slip characteristics.relation between fullload torque and starting torque (numerical problems)
	3rd	Establish the relations between Rotor Copperloss, Rotor output and Gross Torque and relationship of slip with rotor copperloss. (numerical problems)
	4th	Methods of starting and different types ofstarters used for three phase Induction motor.
3rd	1st	Explain speed control by Voltage Control, Rotorresistance control, Pole changing, frequency control methods.
	2nd	Plugging as applicable to three phase inductionmotor.
	3rd	Describe different types of motor enclosures.
	4th	Explain principle of Induction Generator and state its applications
4th	1st	Basic working principle of alternator and therelation between speed and frequency
	2nd	Terminology in armature winding and expressions for winding factors (Pitch factor, Distributionfactor).
	3rd	Explain harmonics, its causes and impact on winding factor.
	4th	E.M.F equation of alternator. (Solve numericalproblems).
5th	1st	Armature reaction and its effect on emf at different power factor of load.
	2nd	The vector diagram of loaded alternator.(numerical

	3rd		problems)
			Open circuit test of alternator
	4th		Short circuit test of alternator
6th	1st		Determination of voltage regulation of Alternatorby direct loading and synchronous impedance method. (Solve numerical problems)
	2nd		Parallel operation of alternator using synchro-scope and dark & bright lamp method.
	3rd		Distribution of load by parallel connectedalternators.
	4th		Constructional feature of Synchronous Motor
7th	1st		Principles of operation, concept of load angle
	2nd		Derive torque, power developed.
	3rd		Effect of varying load with constant excitation.
	4th		Effect of varying excitation with constant load.
8th	1st		Effect of varying excitation with constant load.
	2nd		Power angle characteristics of cylindrical rotormotor.
	3rd		Power angle characteristics of cylindrical rotormotor.
	4th		Explain effect of excitation on Armature currentand power factor.
9th	1st		Explain effect of excitation on Armature currentand power factor.
	2nd		Hunting in Synchronous Motor
	3rd		Function of Damper Bars in synchronous motorand generator.
	4th		Describe method of starting of Synchronousmotor.
10th	1st		State application of synchronous motor.
	2nd		Ferrari's principle.
	3rd		Double revolving field theory and Cross-fieldtheory to analyze starting torque of 1-phase induction motor.
	4th		Working principle, Torque speed characteristics,performance characteristics and application of Split phase motor
	1st		Working principle, Torque speed characteristics, performance characteristics and application of Capacitor

11th		Start motor.
	2nd	Working principle, Torque speed characteristics, performance characteristics and application of Capacitor start, capacitor run motor.
	3rd	Working principle, Torque speed characteristics, performance characteristics and application of Permanent capacitor type motor.
	4th	Working principle, Torque speed characteristics, performance characteristicsand application of Shaded pole motor.
12th	1st	Method to change the direction of rotation ofabove motors.
	2nd	Construction, working principle, running characteristic and application of single phase series motor.
	3rd	Construction, working principle and application ofUniversal motors.
	4th	Working principle of Repulsion start Motor,
13th	1st	Working principle of Repulsion start Induction runmotor.
	2nd	Working principle of Repulsion Induction motor.
	3rd	Principle of Stepper motor.Classification of Stepper motor.
	4th	Principle of variable reluctant stepper motor.
14th	1st	Principle of Permanent magnet stepper motor.
	2nd	Principle of hybrid stepper motor.
	3rd	Applications of Stepper motor.
	4th	Construction of Core type,shell type transformer
15th	1st	Grouping of winding, Advantages
	2nd	parallel operation of the three phasetransformers.
	3rd	tap changer (On/Off load tap changing)
	4th	Maintenance Schedule of Power Transformers.

Signature of the faculty Concerned

Lect.in Elect.Engg.
Govt.Poly.Bhadrak