

LESSON PLAN

SUB: ENERGY CONVERSION - II

BRANCH:- ELECTRICAL ENGG.


SEMESTER: 5th

SESSION:2022-2023

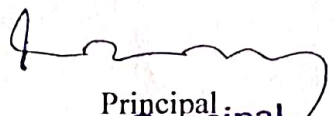
NAME OF FACULTY: NIBEDITA HO



**GOVERNMENT POLYTECHNIC,
BHADRAK**


Hod. Electrical
HOD (ELECT.)
G.P. BHADRAK


Academic Co-ordinator


Principal
Govt. Polytechnic, Bhadrak
Principal
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Discipline: Electrical Engg.	Semester: 5 th	Name of the Teaching Faculty : Nibedita Ho
Subject: Energy Conversion - II	No. of Days/per week class allotted:4	Semester from date: 15.09.2022 To Date: 21.01.2023 No. of Weeks:15
Week	Class Day	Theory
1 st	1 st	Basic working principle of alternator and therelation between speed and frequency
	2 nd	Terminology in armature winding and expressions for winding factors (Pitch factor, Distributionfactor).
	3 rd	Explain harmonics, its causes and impact onwinding factor.
	4 th	E.M.F equation of alternator. (Solve numericalproblems).
2 nd	1 st	Armature reaction and its effect on emf atdifferent power factor of load.
	2 nd	The vector diagram of loaded alternator.(numerical problems)
	3 rd	Open circuit test of alternator
	4 th	Short circuit test of alternator
3 rd	1 st	Determination of voltage regulation of Alternatorby direct loading and synchronous impedance method. (Solve numerical problems)
	2 nd	Parallel operation of alternator using synchro-scope and dark & bright lamp method.
	3 rd	Distribution of load by parallel connectedalternators.
	4 th	Determination of voltage regulation of Alternatorby direct loading and synchronous impedance method. (Solve numerical problems)
4 th	1 st	Parallel operation of alternator using synchro-scope and dark & bright lamp method.
	2 nd	Distribution of load by parallel connectedalternators.
	3 rd	Constructional feature of Synchronous Motor
	4 th	Principles of operation, concept of load angle
5 th	1 st	Derive torque, power developed.
	2 nd	Effect of varying load with constant excitation.
	3 rd	Effect of varying excitation with constant load.
	4 th	Power angle characteristics of cylindrical rotormotor.
6 th	1 st	Explain effect of excitation on Armature currentand power factor.

	2 nd	Hunting in Synchronous Motor
	3 rd	Function of Damper Bars in synchronous motor and generator.
	4 th	Describe method of starting of Synchronous motor.
	1 st	State application of synchronous motor.
7 th	2 nd	Production of rotating magnetic field.
	3 rd	Constructional feature of Squirrel cage and Slipring induction motors.
	4 th	Working principles of operation of 3-phase Induction motor.
8 th	1 st	Define slip speed, slip and establish the relation of slip with rotor quantities.
	2 nd	Derive expression for torque during starting and running conditions and derive conditions for maximum torque. ((numerical problems)
	3 rd	Torque-slip characteristics. relation between full load torque and starting torque (numerical problems)
	4 th	Establish the relations between Rotor Copper loss, Rotor output and Gross Torque and relationship of slip with rotor copper loss. (numerical problems)
9 th	1 st	Methods of starting and different types of starters used for three phase Induction motor.
	2 nd	Explain speed control by Voltage Control, Rotor resistance control, Pole changing, frequency control methods.
	3 rd	Plugging as applicable to three phase induction motor.
	4 th	Describe different types of motor enclosures.
10 th	1 st	Explain principle of Induction Generator and state its applications
	2 nd	Ferrari's principle.
	3 rd	Double revolving field theory and Cross-field theory to analyze starting torque of 1-phase induction motor.
	4 th	Working principle, Torque speed characteristics, performance characteristics and application of Split phase motor
11 th	1 st	Working principle, Torque speed characteristics, performance characteristics and application of Capacitor Start motor
	2 nd	Working principle, Torque speed characteristics, performance characteristics and application of Capacitor start, capacitor run motor.
	3 rd	Working principle, Torque speed characteristics,

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


 Signature of the Concerned faculty