GIET
In Pursuit of Innovation

GIETPOLYTECHNIC,JAGATPUR,CUTTACK

LESSONPLAN

DISCIPLINE:- ELECTRICAL ENGINEERING	SEMESTER:- 4TH	NAME OF THE TEACHING FACULTY: SUDIPTA KUMAR DAS
SUBJECT TH:3-AC MACHINES AND SPECIAL ELECTRIC MACHINES	NO. OF DAYS/PER WEEK CLASS ALLOTTED:- 3	SEMESTER FROM DATE:- 22-12-2025 TO DATE :-18 - 04 -2026 NO. OF WEEK:15

WEEK	CLASS DAY	THEORY
1st	1st	**UNIT-1:Three Phase Induction Motor** 1.1 Working principle: production of rotating magnetic field, Synchronous speed, rotor speed and sip
	2nd	1.2 Constructional details of 3 phase induction motors: Squirrel cage induction motor and Slip ring induction motor
	3rd	1.3 Rotor quantities: frequency, induced emf, power factor at starting and running condition
2nd	1st	1.4 Characteristics of torque versus slip (speed), Torques: starting, full load and maximum with relations among them(numericals)
	2nd	1.5 Induction motor as a generalized transformer with phasor diagram
	3rd	1.6 Four quadrant operation, Power flow diagram(numericals
3rd	1st	1.7 Starters: need and types; stator resistance, auto transformer, star delta, rotor resistance and soft starters
	2nd	1.8 Speed control methods: stator voltage, pole changing, rotorresistance and VVVF
	3rd	1.9 Motor selection for different applications as per the load torque-speed requirements
4th	1st	1.10 Maintenance of three phase induction motors
	2nd	**UNIT-2:Single phase Induction Motors** 2.1 Double field revolving theory
	3rd	2.2 Principle of making single phase induction motors self-start
5th	1st	2.3 Construction and working of single phase induction motors
	2nd	2.3.1 Resistance start induction run
	3rd	2.3.2 Capacitor start induction run 2.3.3 Capacitor start capacitor run
6th	1st	2.3.4 Shaded pole 2.3.5 Repulsion type
	2nd	2.3.6 Series motor 2.3.7 Universal motor
	3rd	2.3.8 Hysteresis motor
7th	1st	2.4 Torque-speed characteristics for all of the above motors
	2nd	2.5 Motor selection for different applications as per the load torque-speed requirements
	3rd	2.6 Maintenance of single phase induction motors
8th	1st	**UNIRT-3:Three phase Alternator** 3.1 Principle of working, moving and stationary armatures
	2nd	3.2 Constructional details: parts and their functions
	3rd	3.2.1 Rotor constructions
9th	1st	3.2.2 Windings: Single and Double layer
	2nd	3.3 E.M.F. equation of an Alternator with numerical by considering short pitch factor and distribution facto
	3rd	3.4. Alternator loading 3.4.1 Factors affecting the terminal voltage of alternator

10th	1st	3.4.2 Armature resistance and leakage reactance drops.
	2nd	3.5 Armature reaction at various power factors and synchronous impedance.
	3rd	3.6 Voltage regulation: direct loading and synchronous impedance Methods 3.7 Maintenance of alternators
11th	1st	**UNIT-4:Synchronous Motors** 4.1 Principle of working /operation
	2nd	4.2 Torques: starting torque ,running torque, pull in torque, pull out tor.que
	3rd	4.3 Synchronous motor on load with constant excitation (numerical), effect of excitation at constant load (numerical).
12th	1st	4.4 Curves and Inverted V-Curves.
	2nd	4.5 Hunting and Phase swinging.
	3rd	4.6 Methods of Starting of Synchronous Motor
13th	1st	4.7 Losses in synchronous motors and efficiency (no numerical). 4.8 Applications areas
	2nd	**UNIT-5:Fractional horse power (FHP) Motors** 5.1 Construction and working.
	3rd	5.1.1 Synchronous Reluctance Moto
14th	1st	5.1.2 Switched Reluctance Motor 5.1.3 BLDC
	2nd	5.1.4 Permanent Magnet Synchronous Motors 5.1.5 Stepper motors
	3rd	5.1.6 AC and DC servomotors 5.2 Torque speed characteristics of above motors 5.3 Applications of above motor
15th	1st	**REVISION**
	2nd	**REVISION**
	3rd	**REVISION**

23.12.25
Signature of faculty

23.12.25
Signature of sr lecturer

Head of Dept. (HOD)
Electrical & ETC E...
G... J.T (POLY)...

23.12.25
Signature of principal

Principal
GIET (Polytechnic)
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