

GOVT. POLYTECHNIC MAYURBHANJ LESSON PLAN (WINTER-2022/23)

Discipline : ELECTRICAL ENGG.		Semester: 5th Sem		Name of the Teaching Faculty : Debasis Patra	
Subject : EC-II TH2		No. of Days / per week class allotted : 04		Semester From date : 15.09.2022	To Date : 22.12.2023
MONTH	Week	Day	Unit	Topics	
SEPTEMBER	3rd		UNIT-1	1.ALTERNATOR	
		4th		Types of alternator and their constructional features.	
		5th		Basic working principle of alternator and the relation between speed and frequency.	
	4th	1st		Terminology in armature winding and expressions for winding factors (Pitch factor, Distribution factor).	
		3rd		Explain harmonics, its causes and impact on winding factor.	
		4th		E.M.F equation of alternator. (Solve numerical problems)	
		5th		Explain Armature reaction and its effect on emf at different power factor of load.	
	5th	1st		The vector diagram of loaded alternator. (Solve numerical problems)	
		3rd		Testing of alternator (Solve numerical problems) Open circuit test. Short circuit test.	
		4th		Determination of voltage regulation of Alternator by direct loading and synchronous impedance method. (Solve numerical)	
		5th		Parallel operation of alternator using synchro-scope and dark & bright lamp method.	
	2nd			Durga Puja holiday	
OCTOBER	3rd	1st	UNIT-2	Explain distribution of load by parallel connected alternators	
				2.SYNCHRONOUS MOTOR	
		3rd		Constructional feature of Synchronous Motor. Principles of operation, concept of load angle	
		4th		Derive torque, power developed.	
	4th	5th		CLASS TEST-1	
		1st		Effect of varying load with constant excitation. Effect of varying excitation with constant load	
		3rd		Power angle characteristics of cylindrical rotor motor. Explain effect of excitation on Armature current and power factor.	
		4th		Hunting in Synchronous Motor. Function of Damper Bars in synchronous motor and generator.	
	5th	5th		Describe method of starting of Synchronous motor. State application of synchronous motor.	
			UNIT-3	3.THREE PHASE INDUCTION MOTOR	
		1st		Production of rotating magnetic field.	
	6th	3rd		Diwali (holiday)	
		4th		Production of rotating magnetic field.	
		5th		Constructional feature of Squirrel cage and Slip ring induction motors.	
	1st	1st		Working principles of operation of 3-phase Induction motor	
		3rd		Define slip speed, slip and establish the relation of slip with rotor quantities.	
		4th		Derive expression for torque during starting and running conditions and derive conditions for maximum torque. (solve numerical)	
	2nd	5th		Torque-slip characteristics	
		1st		Derive relation between full load torque and starting torque etc. (solve numerical problems)	
		3rd		Establish the relations between Rotor Copper loss, Rotor output and Gross Torque and relationship of slip with rotor copper loss.	
		4th		Rash purnima(holiday)	

NOVEMBER		5th		Methods of starting and different types of starters used for three phase Induction motor.
	3rd	1st		Explain speed control by Voltage Control, Rotor resistance control, Pole changing, frequency control methods
		3rd		Plugging as applicable to three phase induction motor.
		4th		Describe different types of motor enclosures.
		5th		Explain principle of Induction Generator and state its applications
	4th		UNIT-4	4.SINGLE PHASE INDUCTION MOTOR
		1st		Introduction.
		3rd		Explain Ferrari's principle.
		4th		Explain double revolving field theory and Cross-field theory to analyze starting torque of 1-phase induction motor.
		5th		Explain Working principle, Torque speed characteristics, performance characteristics and application of ,Split phase
DECEMBER	5th	1st		Permanent capacitor type motor.,Shaded pole motor
		3rd		Explain the method to change the direction of rotation of above motors
				5.COMMUTATOR MOTORS
	1st	4th	UNIT-5	Construction, working principle of single phase series motor
		5th		Running characteristic and application of single phase series motor
	2nd	1st		Construction, working principle and application of Universal motors.
		3rd		Working principle of Repulsion start Motor
		4th		Working principle of Repulsion start Induction run motor
		5th		Working principle of Repulsion Induction motor
				6.SPECIAL ELECTRICAL MACHINE
	3rd	1st	UNIT-6	Principle of Stepper motor,Classification of Stepper motor
		3rd		CLASS TEST-1
		4th		Principle of variable reluctant stepper motor & Principle of Permanent magnet stepper motor.
		5th		Principle of hybrid stepper motor & Applications of Stepper motor.
	4th		UNIT-7	7.THREE PHASE TRANSFORMERS
		1st		Explain Grouping of winding, Advantages.Explain parallel operation of the three phase transformers.
		3rd		Explain tap changer (On/Off load tap changing)
		4th		Maintenance Schedule of Power Transformers.