

GOVT. POLYTECHNIC MAYURBHANJ LESSON PLAN

Discipline : ELECTRICAL ENGG.		Semester: 5th Sem		Name of the Teaching Faculty : Debasis Patra	
Subject : EC-II		No. of Days / per week class allotted : 04		Semester From date : 01.08.2023	To Date : 30.11.2023
MONTH	Week	Day	Unit	Topics	
AUGUST	1ST	3RD	UNIT-1	1-ALTERNATOR (Synchronous Generator)	
				Types of alternator and their constructional features.	
		4TH		Basic working principle of alternator and the relation between speed and frequency.	
		5TH		Terminology in armature winding and expressions for winding factors (Pitch factor, Distribution factor).	
	2ND	1ST		Explain harmonics, its causes and impact on winding factor.	
		3RD		E.M.F equation of alternator. (Solve numerical problems)	
		4TH		Explain Armature reaction and its effect on emf at different power factor of load.	
		5TH		The vector diagram of loaded alternator. (Solve numerical problems)	
	3rd	6TH		Testing of alternator (Solve numerical problems) Open circuit test. Short circuit test.	
		1ST		Determination of voltage regulation of Alternator by direct loading and synchronous impedance method. (Solve numerical problems)	
		1ST		Parallel operation of alternator using synchro-scope and dark & bright lamp method.	
		2ND		Explain distribution of load by parallel connected alternators	
	4TH	1ST	UNIT-2	2-SYNCHRONOUS MOTOR	
				Constructional feature of Synchronous Motor. Principles of operation, concept of load angle	
		3RD		Derive torque, power developed.	
		4TH		Effect of varying load with constant excitation. Effect of varying excitation with constant load	
		5TH		Power angle characteristics of cylindrical rotor motor. Explain effect of excitation on Armature current and power factor.	
	5TH	1ST		Hunting in Synchronous Motor. Function of Damper Bars in synchronous motor and generator.	
		3RD		JHULANA PURNIMA	
		4TH		Describe method of starting of Synchronous motor. State application of synchronous motor.	

SEPTEMBER	1ST	5TH	UNIT-3	3-THREE PHASE INDUCTION MOTOR
	2ND	1ST		Production of rotating magnetic field.
		3RD		Constructional feature of Squirrel cage and Slip ring induction motors.
		4TH		JANMASTAMI
		5TH		Working principles of operation of 3-phase Induction motor
	3rd	1ST		Define slip speed, slip and establish the relation of slip with rotor quantities.
		3RD		Derive expression for torque during starting and running conditions and derive conditions for maximum torque. (solve numerical problems)
		4TH		Torque-slip characteristics
		5TH		Derive relation between full load torque and starting torque etc. (solve numerical problems)
	4TH	1ST		CLASS TEST-1
		3RD		Establish the relations between Rotor Copper loss, Rotor output and Gross Torque and relationship of slip with rotor copper loss. (solve numerical problems)
		4TH		Methods of starting and different types of starters used for three phase Induction motor.
		5TH		NUAKHAI
	5TH	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
OCTOBER	1ST	1ST	UNIT-4	BIRTHDAY OF MUHAMMAD
		3RD		GANDHI JAYANTI
		4TH		4-SINGLE PHASE INDUCTION MOTOR
		5TH		Explain Ferrari's principle.
	2ND	1ST		Explain double revolving field theory and Cross-field theory to analyze starting torque of 1-phase induction motor.
		3RD		Explain Working principle, Torque speed characteristics, performance characteristics and application of following single phase motors.
		4TH		4.3.1. Split phase motor. 4.3.2. Capacitor Start motor. 4.3.3. Capacitor start, capacitor run motor. 4.3.4. Permanent capacitor type motor. 4.3.5. Shaded pole motor
				Explain the method to change the direction of rotation of above motors
				5-COMMUTATOR MOTORS
				Construction, working principle, running characteristic and

OCT		5TH		application of single phase series motor
	3RD	1ST		Construction, working principle, running characteristic and
		3RD		Application of single phase series motor
		4TH	UNIT-5	Construction, working principle and application of Universal motors.
		5TH		INTERNAL EXAM
		1ST		DURGA PUJA
	4TH	3RD		
		4TH		
		5TH		
	5TH	1ST		Working principle of Repulsion start Motor,
NOVEMBER	1ST	3RD		Working principle of Repulsion start Induction run motor
		4TH		Working principle of Repulsion Induction motor.
		5TH	UNIT-6	6-SPECIAL ELECTRICAL MACHINE
	2ND	1ST		Principle of Stepper motor,
		3RD		Classification of Stepper motor
		4TH		Principle of variable reluctant stepper motor
		5TH		Principle of Permanent magnet stepper motor.
	3RD	1ST	UNIT-7	Principle of hybrid stepper motor,
		3RD		Applications of Stepper motor.
		4TH		THREE PHASE TRANSFORMERS
		5TH		Explain Grouping of winding, Advantages
	4TH	1ST		Explain parallel operation of the three phase transformers.
		3RD		Explain tap changer (On load tap changing)
		4TH		Explain tap changer (Off load tap changing)
		5TH		Maintenance Schedule of Power Transformers.
	5TH	1ST		RASA PURNIMA
		3RD		RIVISION
		4TH		RIVISION
		5TH		CLASS TEST-2