SYNERGY POLYTECHNIC, BBSR

Lesson Plan

Discipline : EE	Semester : 5th	Name of the Teaching Faculty : Er.DHARANIDHAR SAHU (Principal)
SUBJECT : EC-II	No of Days/per week class allotted: 04	Semester from Date: 1.7.24 to Date: 18.11.24 No of Weeks: 15
Week	Class Day	Theory/Practical Topics
1st	1st	**1.ALTERNATOR: Types of alternator and their constructional features.**
	2nd	Basic working principle of alternator and the relation between speed and frequency.
	3rd	Terminology in armature winding and expressions for winding factors (Pitch factor, Distribution factor).
	4th	Explain harmonics, its causes and impact on winding factor.
2nd	1st	E.M.F equation of alternator. (Solve numerical problems).
	2nd	Explain Armature reaction and its effect on emf at different power factor of load.
	3rd	The vector diagram of loaded alternator. (Solve numerical problems)
	4th	Testing of alternator (Solve numerical problems)
3rd	1st	Open circuit test, Short circuit test.
	2nd	synchronous impedance method. (Solve numerical problems)
	3rd	Parallel operation of alternator using synchro-scope and dark & bright lamp method.
	4th	Explain distribution of load by parallel connected alternators.
4th	1st	Discussion of MCQs
	2nd	**2. SYNCHRONOUS MOTOR: Constructional feature of Synchronous Motor.**
	3rd	Principles of operation, concept of load angle
	4th	Derive torque, power developed.
5th	1st	Effect of varying load with constant excitation.
	2nd	Effect of varying excitation with constant load.
	3rd	Power angle characteristics of cylindrical rotor motor.
	4th	Explain effect of excitation on Armature current and power factor.
6th	1st	Hunting in Synchronous Motor,Function of Damper Bars
	2nd	Describe method of starting of Synchronous motor.
	3rd	State application of synchronous motor.
	4th	Discussion of MCQs
7th	1st	**3. THREE PHASE INDUCTION MOTOR:Production of rotating magnetic field.**
	2nd	Constructional feature of Squirrel cage and Slip ring induction motors.
	3rd	Working principles of operation of 3-phase Induction motor.
	4th	Define slip speed, slip and establish the relation of slip with rotor quantitie

8th	1st	Derive expression for torque during starting and running conditions and derive conditions for maximum torque. (solve numerical problems
	2nd	Torque-slip characteristics.
	3rd	Derive relation between full load torque and starting torque etc. (solve numerical problems)
	4th	Gross Torque and relationship of slip with rotor copper loss. (solve numerical problems)
9th	1st	Methods of starting and different types of starters used for three phase Induction motor.
	2nd	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.
10th	1st	Explain principle of Induction Generator and state its applications.
	2nd	Discussion of MCQs
	3rd	**4. SINGLE PHASE INDUCTION MOTOR:Explain Ferrari's principle.**
	4th	starting torque of 1-phase induction motor.
11th	1st	characteristics and application of following single phase motors.
	2nd	Split phase motor, Capacitor Start motor.
	3rd	Capacitor start, capacitor run motor.
	4th	Permanent capacitor type motor,Shaded pole motor.
12th	1st	Explain the method to change the direction of rotation of above motors.
	2nd	Discussion of MCQs
	3rd	**5. COMMUTATOR MOTORS:Construction, working principle, running**
	4th	Construction, working principle and application of Universal motors.
13th	1st	motor, Repulsion Induction motor.
	2nd	**6. SPECIAL ELECTRICAL MACHINE:Principle of Stepper motor.**
	3rd	Classification of Stepper motor.
	4th	Principle of variable reluctant stepper motor.Principle of Permanent magnet stepper motor.
14th	1st	Principle of hybrid stepper motor.Applications of Stepper motor.
	2nd	Discussion of MCQs
	3rd	**7.THREE PHASE TRANSFORMERS:Explain Grouping of winding, Advantages.**
	4th	Explain parallel operation of the three phase transformers.
15th	1st	Explain tap changer (On/Off load tap changing)
	2nd	Maintenance Schedule of Power Transformers.
	3rd	Discussion of MCQs

Principal