GOVT. POLYTECHNIC BOLANGIR LESSON PLAN

Discipline : ELECTRICAL ENGG.	Semester: 5th Sem	Name of the Teaching Faculty : SUJATA BHOI	
Subject : EC 2	No. of Days / per week class allotted : 04	Semester From date : 01.09.2020 To Date : 31.12.2020 No. of Weesks : 15	
Week	**Class Day**	**Topics**	
1ST SEPT	1st	**CHAPTER 1(ALTERNATOR)** 1.1 Explain and derive production of rotating magnetic field.	
	2nd	1. 2 Explain constructional feature of Squirrel cage and Slip ring induction motors.	
	3rd	1. 3 Explain principles of operation of 3-phase Induction motor.	
	4th	1. 4 Explain slip speed, slip and slip relation with rotor quantities	
2ND SEPT	1st	1. 5 Derive Torque during starting and running and conditions for maximum torque. (solve numerical problems)	
	2nd	1. 6 Derive Torque-slip characteristics.	
	3rd	1. 7 Derive relation between full load torque and starting torque etc. (solve numerical problems)	
	4th	1. 8 Determine the relations between Rotor Copper loss, Rotor output and Gross Torque, and relationship of slip with rotor copper loss. (solve numerical problems)	
3RD SEPT	1st	1. 9 Explain and state Methods of starting and different types of starters.	
	2nd	1. 10 Explain speed control by Voltage Control, Rotor resistance control, pole changing, frequency control methods.	
	3rd	1. 11 Describe plugging applicable to three phase induction motor.	
	4th	1. 12 Describe different types of motor enclosures	
4TH SEPT	1st	1. 13 Explain principle of Induction Generator	
	2nd	state its applications	
	3rd	**chapter 2(ALTERNATOR)** 2.1 state type of alternator	
	4th	there constructional features.	

1ST OCT	1st	2.2 Explain working principle of alternator and establish the relation between speed and frequency
	2nd	2.3 Explain terminology in armature winding, and derive expressions for winding factors
	3rd	(Pitch factor, Distribution factor)
	4th	2.4 Explain harmonics, its causes and impact on winding factor.

2ND OCT	1st	2.5 Derive E.M.F equation. (Solve numerical problems)
	2nd	2.6 Explain Armature reaction and its effect on emf at
	3rd	2.7 Draw the vector diagram of loaded alternator. (Solve numerical problems)
	4th	2.8 State and explain testing of alternator (open circuit and short circuit methods) (Solve numerical problems)

3RD OCT	1st	2.9 Determination of voltage regulation of Alternator by direct loading and synchronous impedance method.
	2nd	2.10 Explain parallel operation of alternator using synchro-scope
	3rd	dark and bright lamp method.
	4th	2.11 Explain distribution of load by parallel connected alternators

1ST NOV	1st	**SYNCHRONOUS MOTOR(CHAPTER 3)** 3.1 Explain constructional feature of Synchronous Motor.
	2nd	3.2 Explain principles of operation, concept of load angle.
	3rd	3.3 Explain effect of varying load with constant excitation.
	4th	3.4 Explain effect of varying excitation with constant load. 3.5Derive torque,power developed.

2ND NOV	1st	3.6 Explain power angle characteristics of cylindrical rotor motor.
	2nd	3.7 Explain effect of excitation on Armature current and power factor.
	3rd	3.8 Explain Hunting & function of Damper Bars.
	4th	3.9 Describe method of starting of Synchronous motor. 3.10 state application of synchronous motor.

3RD NOV	1st	**SINGLE PHASE INDUCTION MOTOR(CHAPTER 4)** 4.1 Explain Rotating – field theory of 1-phase induction motor.
	2nd	4.2 Explain Ferrari's principle.

	3rd	4.3 Explain Working principle, Torque speed characteristics
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	4th	performance characteristics and application of following single phase motors

	1st	4.3.1 Split phase motor. 4.3.2 capacitor start motor
4TH NOV	2nd	4.3.3 Capacitor start, capacitor run motor 4.3.4.Parmanent capacitor type motor
	3rd	4.3.5 Shaded pole motor.
	4th	4.4 Explain the method to change the direction of rotation of above motors

	1st	**CHAPTER 5(COMMUTATOR MOTOR)** 5.1 Explain construction, working principle, running characteristic.
1ST DEC	2nd	application of single phase series motor
	3rd	5.2 Explain construction, working principle
	4th	Application of universal motor

	1st	5.3 Explain working principle of Repulsion start Motor
	2nd	Repulsion start Induction run motor, Repulsion Induction motor
2ND DEC	3rd	**SPECIAL ELECTRICAL MACHINE(CHAPTER 6)** 6.1 principle of stepper motor
	4th	6.2 classification of stepper motor 6.3 principal of variable reluctancestepper motor

	1st	6.4 Principle of Permanent magnet stepper motor.
	2nd	6.5 Principle of hybrid stepper motor.
3RD DEC	3rd	6.6 Applications of Stepper motor.
	4th	**THREE PHASE TRANSFORMER(CHAPTER 7)** 7.1 explaining grouping of winding,advantage

	1st	7.2 Explain parallel operation of the three phase transformers.
4TH DEC	2nd	7.3 Explain tap changer (On/Off load tap changing)
	3rd	7.4 State maintenance of Transformers
	4th	7.4 State maintenance of Transformers