

GOVT. POLYTECHNIC NAYAGARH LESSON PLAN

Discipline : ELECTRICAL ENGG.	Semester: 6th Sem	Name of the Teaching Faculty : Suryamani Sahoo
Subject : E.C II	No. of Days / per week class allotted : 04	Semester From date : 15.09.2022 To Date : 22.12.2022 No. of Weeks : 15
Week	Class Day	Topics
3RD SEPTEMBER	1st	1. ALTERNATOR :1.1. Types of alternator and their constructional features.
	2nd	1.2. Basic working principle of alternator and the relation between speed and frequency.
4TH SEPTEMBER	1st	1.3. Terminology in armature winding and expressions for winding factors (Pitch factor, Distribution factor)
	2nd	1.4. Explain harmonics, its causes and impact on winding factor.
	3rd	1.5. E.M.F equation of alternator. (Solve numerical problems).
	4th	1.6. Explain Armature reaction and its effect on emf at different power factor of load.
5TH SEPTEMBER	1st	1.7. The vector diagram of loaded alternator. (Solve numerical problems)
	2nd	1.8. Testing of alternator (Solve numerical problems)1.8.1. Open circuit test.
	3rd	1.8. Testing of alternator (Solve numerical problems)1.8.2. Short circuit test.
	4th	1.9. Determination of voltage regulation of Alternator by direct loading and synchronous impedance method. (Solve numerical problems)
1ST OCTOBER		PUJA HOLIDAY
2ND OCTOBER	1st	1.10. Parallel operation of alternator using synchro-scope and dark & bright lamp method
	2nd	1.11. Explain distribution of load by parallel connected alternators
3RD OCTOBER	1st	2. SYNCHRONOUS MOTOR :2.1. Constructional feature of Synchronous Motor.2.2. Principles of operation, concept of load angle
	2nd	2.3. Derive torque, power developed2.4. Effect of varying load with constant excitation.
	3rd	2.5. Effect of varying excitation with constant load.2.6. Power angle characteristics of cylindrical rotor motor
	4th	2.7. Explain effect of excitation on Armature current and power factor2.8. Hunting in Synchronous Motor.
4TH OCTOBER	1st	2.9. Function of Damper Bars in synchronous motor and generator2.10. Describe method of starting of Synchronous motor
	2nd	2.11. State application of synchronous motor.Revision
	3rd	Doubt clear and Unit Test.
	4th	3. THREE PHASE INDUCTION MOTOR 3.1. Production of rotating magnetic field3.2. Constructional feature of Squirrel cage and Slip ring induction motors
5TH OCTOBER	1st	3.3. Working principles of operation of 3-phase Induction motor.3.4. Define slip speed, slip and establish the relation of slip with rotor quantities
	2nd	3.5. Derive expression for torque during starting and running conditions and derive conditions for maximum torque. (solve numerical problems)
	3rd	3.6. Torque-slip characteristics
	4th	3.7. Derive relation between full load torque and starting torque etc. (solve numerical problems)
	1st	3.8. Establish the relations between Rotor Copper loss, Rotor output and Gross Torque and relationship of slip with rotor copper loss. (solve numerical problems)

1ST NOVEMBER	2nd	3.9. Methods of starting and different types of starters used for three phase Induction motor
	3rd	3.10. Explain speed control by Voltage Control, Rotor resistance control
	4th	3.10. Explain speed control by , Pole changing, frequency control methods
2ND NOVEMBER	1st	3.11. Plugging as applicable to three phase induction motor.3.12. Describe different types of motor enclosures
	2nd	3.13. Explain principle of Induction Generator and state its applications
	3rd	Doubt Clear & Unit Test
	4th	4. SINGLE PHASE INDUCTION MOTOR 4.1. Explain Ferrari's principle
3RD NOVEMBER	1st	4.2. Explain double revolving field theory and Cross-field theory to analyze starting torque of 1-phase induction motor.
	2nd	4.3. Explain Working principle, Torque speed characteristics, performance characteristics and application of following single phase motors4.3.1. Split phase motor. 4.3.2. Capacitor Start motor
	3rd	4.3.3. Capacitor start, capacitor run motor. 4.3.4. Permanent capacitor type motor
	4th	4.3.5. Shaded pole motor4.4. Explain the method to change the direction of rotation of above motors.
4TH NOVEMBER	1st	Revision
	2nd	Doubt Clear & Unit Test
	3rd	5. COMMUTATOR MOTORS: 5.1. Construction, working principle single phase series motor
	4th	5.1Running characteristic and application of single phase series motor
5TH NOVEMBER	1st	5.2. Construction, working principle and application of Universal motors.
	2nd	5.3Working principle of Repulsion start Motor
	3rd	5.3Repulsion start Induction run motor, Repulsion Induction motor
	4th	Doubt Clear & Unit Test
1ST DECEMBER	1st	6. SPECIAL ELECTRICAL MACHINE: 6.1. Principle of Stepper motor.6.2. Classification of Stepper motor.
	2nd	6.3. Principle of variable reluctant stepper motor
	3rd	6.4. Principle of Permanent magnet stepper motor
	4th	6.5. Principle of hybrid stepper motor. 6.6. Applications of Stepper motor.
2ND DECEMBER	1st	Revision
	2nd	7. THREE PHASE TRANSFORMERS 7.1. Explain Grouping of winding, Advantages
	3rd	7.2. Explain parallel operation of the three phase transformers
	4th	7.3. Explain tap changer (On/Off load tap changing
3RD DECEMBER	1st	7.4. Maintenance Schedule of Power Transformers
	2nd	Revision
	3rd	Revision
	4th	Revision
4TH DECEMBER	1st	Doubt Clear & Unit Test
	2nd	Revision
	3rd	Revision
	4th	Revision