

Course Outcome:	
At the end of the course student will be able to:	
CO.EEC.256.1	understand the concept of synchronous generator.
CO.EEC.256.2	understand the concept of three phase induction motor.
CO.EEC.256.3	understand the concept of synchronous motor.
CO.EEC.256.4	understand the concept of single phase motor

List of Experiments:

1. To conduct no-load and blocked rotor test on three phase squirrel cage Induction motor and draw the equivalent circuit.
2. To conduct the load test on three phase squirrel cage Induction motor
 - (a) Compute torque, output power, efficiency, input power factor and slip for various load settings.
 - (b) To plot the following curves on the same graph sheet from the data obtained in part
 - (1) Efficiency vs. output power.
 - (2) Torque vs. output power.
 - (3) Line current vs. output power.
 - (4) Power factor vs. output power.
 - (5) Slip vs. output power.
 - (c) Also plot Torque-slip characteristic.
3. To conduct the load test on three phase slip ring Induction motor
 - (a) Compute torque, output power, efficiency, input power factor and slip for various load settings.
 - (b) To plot the following curves on the same graph sheet from the data obtained in part
 - (1) Efficiency vs. output power.
 - (2) Torque vs. output power.
 - (3) Line current vs. output power.
 - (4) Power factor vs. output power.
 - (5) Slip vs. output power.
 - (c) Also plot Torque-slip characteristic.
4. To study the different methods available in laboratory for starting three-phase Induction motor and compare them.
5. To find the effect of the variation of supply voltage on the performance of three-phase Induction motor at 120%, 100%, 80%, 60%, and 50% of rated voltage and plot the variation of power factor, speed, current and input power for different voltages.
6. a) Perform no load and short circuit test on a three-phase synchronous generator.
 b) Measure the resistance of the stator windings
 c) Find the voltage regulation at full load at
 - (i) Unity power factor
 - (ii) 0.85 power factor leading
 - (iii) 0.85 power factor lagging by synchronous impedance method.
7. To synchronize a three-phase synchronous generator with the infinite bus bar. (main supply)
8. To start a synchronous motor and study the effect of variation of field current upon the stator current and power factor, hence draw V and inverted V curves of the motor for $\frac{1}{2}$ load, $\frac{3}{4}$ th load and full load. Also draw the unity power factor curve.
9. To perform slip test on a 3 phase synchronous machine and find direct axis and quadrature axis synchronous reactances (X_d , X_q).
10. To study voltage build up in isolated Induction generator and find its load characteristics using suitable terminal capacitor.
11. To conduct no-load and blocked rotor test on single phase squirrel cage Induction motor and draw the equivalent circuit

NOTE:- At least 10 experiments must be performed by the students, they may be asked to do more. At least 5 experiments must be from the given list.

Sr. No.	Title of Lab Experiments	CO
1.	To conduct no-load and blocked rotor test on three phase squirrel cage Induction motor and draw the equivalent circuit.	CO2
2.	To conduct the load test on three phase squirrel cage Induction motor (a) Compute torque, output power, efficiency, input power factor and slip for various load settings. (b) To plot the following curves on the same graph sheet from the data obtained in part (1) Efficiency vs. output power. (2) Torque vs. output power. (3) Line current vs. output power. (4) Power factor vs. output power. (5) Slip vs. output power. (c) Also plot Torque-slip characteristic.	CO2
3	To study the different methods available in laboratory for of starting three-phase Induction motor and compare them.	CO2
4.	To find the effect of the variation of supply voltage on the performance of three-phase Induction motor at 120%, 100%, 80%, 60%, and 50% of rated voltage and plot the variation of power factor, speed, current and input power for different voltages.	CO2
5.	a) Perform no load and short circuit test on a three-phase synchronous generator. b) Measure the resistance of the stator windings c) Find the voltage regulation at full load at (i) Unity power factor (ii) 0.85 power factor leading (iii) 0.85 power factor lagging by synchronous impedance method.	CO1
6.	To start a synchronous motor and study the effect of variation of field current upon the stator current and power factor, hence draw V and inverted V curves of the motor for $\frac{1}{2}$ load, $\frac{3}{4}$ th load and full load. Also draw the unity power factor curve.	CO1, CO2
7.	To perform slip test on a 3 phase synchronous machine and find direct axis and quadrature axis synchronous reactances (X_d , X_q).	CO3
8.	To study voltage build up in isolated Induction generator and find its load characteristics using suitable terminal capacitor.	CO2
9.	To conduct no-load and blocked rotor test on single phase squirrel cage Induction motor and draw the equivalent circuit	CO4
10	To conduct the load test on three phase slip ring Induction motor (a) Compute torque, output power, efficiency, input power factor and slip for various load settings. (b) To plot the following curves on the same graph sheet from the data obtained in part (1) Efficiency vs. output power. (2) Torque vs. output power. (3) Line current vs. output power. (4) Power factor vs. output power. (5) Slip vs. output power. (c) Also plot Torque-slip characteristic.	CO2
Extra 1	To synchronize two three-phase synchronous generator. (Parallel Operation)	CO1
Extra 2	To perform load test on three phase synchronous generator and find voltage regulation at different loads.	CO1