DEPARTMENT OF ELECTRICAL ENGINEERING

Electrical Machine 1 Laboratory

List of Experiment

1.To obtain magnetization characteristics of a DC shunt generator.
2. To obtain load characteristics of a dc shunt generator and compound generator.
(i)Cumulatively compounded (ii) Differentially compounded.
3 .To obtain efficiency of a DC shunt machine using Swinburn's tes
4. To obtain load characteristics of a DC shunt generator.
5. To obtain speed-torque characteristic of a DC shunt motor.
6.To obtain speed control of dc shunt motor using
(i) Armature resistance control. **(ii) Field control** :
7 . To obtain load characteristics of a DC series generator.
8.To study polarity and ratio test of a single phase and 3- phase transformer.
9.To obtain equivalent circuit ,efficiency and voltage regulation of single phase transformer using open circuit and short circuit tests.
10 To obtain efficiency and voltage regulation of a single phase transformer by Sumpner's test.

Electrical Machine-2 Laboratory

List of Experiment

1.To perform no load and blocked rotor test on a three phase squirrel cage induction motor and determine equivalent circuit.

2 To perform load test on a three-phase induction motor and draw Torque-speed characteristics.

3. To perform no load and blocked rotor test on 1-ϕ induction motor and determine equivalent circuit.
4.To study speed control of three phase induction motor by varying supply voltage and by keeping V/f ratio constant.
5.To perform open circuit and short circuit tests on a three phase alternator.
6 To determine V- Curves and Inverted V-curves of a three phase Synchronous Motor.
7.To determine the direct axis reactance (X_d) and quadrature axis reactance (X_q) of synchronous machine.
8.To study synchronization of an alternator with an infinite bus by using (i)dark lamp method (ii) two bright and one dark lamp method.
9.To determine speed-torque characteristics of three phase slip ring induction motor and study the effect of including resistance or capacitance in the rotor circuit.
10.To determine speed-torque characteristics of a 3-phase induction motor by (i) keeping v/f ration constant and (ii)increasing frequency at the rated voltage (using MATLAB)

List of Major Equipment in Electrical Machines Lab

- Setup for Speed control of DC separately excited motor using Ward- Leonard.
- Setup for Speed-torque characteristics of three phase slip ring induction motor and to study the effect of including resistance or capacitance in the rotor circuit.
- Setup for Determination of Xd and Xq of a three phase salient pole synchronous machine using the slip test and to draw.
- Setup to Study and calibration of Temperature using Resistance Temperature Detector (RTD)
- Setup for Three phase to two phase conversion (Scott Connection)
- Hopkinson's Test of DC machine
- Setup for no load and block rotor test on Single phase Induction Motor
- Setup for Speed control of AC motor by V/f method
- Cut out model of DC Shunt Model
- Rectifier Unit
- Main Control Bus Panel
- 3 Point Starter (220V)
- Resistance lamp load(1KWvariable)
- Inductive load bank (1KW variable)
- Capacitive load bank (500W variable)
- Autotransformer
- 3-Phase Autotransformer