LABORATORY INSTRUCTION MANUAL

Electrical Machine - I
Lab. Manual

2nd Year
4th Semester

Prepare by

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GENERAL SAFETY INSTRUCTIONS FOR THE STUDENTS

Read this section carefully before performing any experiment in Electrical Laboratory

1. While performing experiments in the Electrical Machine Laboratory, you must follow stringent safety rules and precautionary measures for your own safety as well as for safety of your co-workers. Always remember that you are working at voltage levels much higher compared to normal working voltage.
2. Don't attempt to enter the lab except when asked for and accompanied by concerned Lab Staff / Instructors.
3. Every student should obtain a set of instruction sheets entitled manufacturing processes Laboratory.
4. For reasons of safety, every student must come to the laboratory in shoes (covering the whole feet). It is unsafe for the students to come to the laboratory wearing garments with parts that that hang about loosely and as such the lab users are requested to avoid wearing garments with loose hanging parts. Students should preferably use half-sleeve shirts wherever possible. The Students should also ensure that floor around the machine is clear and dry (not oily) to avoid slipping. Please report immediately to the lab staff on seeing any coolant / oil spillage.
5. Instruments and tools will be issued from the Lab Staff / Instructors. Every student must produce his identity card for the purpose. Tools, etc. must be returned to the Lab Staff / Instructors on the same day after work hours.
6. The student should take the permission and guidance of the Lab Staff / Instructors before operating any machine. Do not attempt to operate any equipment yourself without permission of the concerned teachers / instructors. You should never be in casual while in the lab. Be careful that you don't operate any button etc. by mistake: it may lead to serious mal operation and hazards. Unauthorized usage of any machine without prior guidance may lead to fatal accidents and injury.
7. Always maintain sufficient distance from the live objects to avoid electrical shock due to induction.
8. Before taking entry in the lab, always double check that all the apparatus and equipment are disconnected from supply and are properly grounded.
9. Use the ground rod to earth all apparatus before putting hands on them.
10. The student will not lean on the machine or take any kind of support of the machine at any point of time. If found leaning on a machine without proper reasons serious action would be taken.
11. Laboratory reports should be submitted on A4 size sheets. The students must submit report on next working day. These have associated some grades.
12. Reports will not be returned to the students. Students may see the graded reports while in the laboratory

LIST OF EXPERIMENT

1. Study of the characteristics of a separately excited D.C generator.
2. Studies of the characteristics of a D.C shunt motor.
3. Speed control of a D.C motor.
4. Study of the characteristics of a compound D.C generator (short shunt)
5. Measurement of the speed of a D.C series motor as a function of load torque.
6. Study of the equivalent circuit of a single-phase transformer.
7. Polarity test on single phase transforms and study of the different connections of three-phase transformer.
8. Study of the equivalent circuit of three-phase induction motor by No-Load & Blocked-Rotor tests.
9. Perform Sumpner's test of single phase transformer.
10. Speed control of three phase slip ring Induction motor by rotor resistance control.
11. Study of the performance of three-phase Squirrel-Cage induction Motor-Determination of Iron-Loss, Friction & Windage Losses.