

**INDEX****UNIT I****Chapter 1 : Safety and Prevention of Accidents****1-1 to 1-25**

**Syllabus :** Safety practices : safety, hazards, accidents, dos and don'ts for electrical supervisors. Electric shock : factors influencing severity of shock, rescuing persons, procedures for artificial respiration. Precautions against electric fires, use of fire extinguishers, actions in case of such fires, types and operation of fire extinguishers. Earthing of electrical equipment {refer IS code IS 3043-1987} : Objectives, classification of electrical equipment with regard to protection against electric shock : class 0 to III.

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### UNIT III

#### Chapter 3 : Testing and Maintenance of Rotating

##### Machines

##### 3-1 to 3-82

**Syllabus :** Testing : Need and standards, tolerance, types: routine, type, special and supplementary tests, Methods of testing: direct, indirect and regenerative with advantages and applications. Induction motor testing : Routine, type and special test of single phase induction motor as per IS 7572 - 1974 (re-affirmed in 2002) and three phase induction motor as per IS4029 - 2010. Alternator and synchronous motor testing : Routine, type and special test of three phase alternator and synchronous motor as per IS 7132 - 1973 (reaffirmed in 2002). Trouble shooting chart for single phase and three induction motor (IS 900 - 1992). Foundations : Requirements and factors affecting rotating machine foundation. Tools / instruments : Bearing puller, filler gauge, dial indicator, spirit level, megger, earth tester, growler. test lamps, multimeter, spanner sets and screwdrivers.

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## UNIT IV

### Chapter 4 : Testing and Trouble shooting of

#### Transformers

**4-1 to 4-33**

**Syllabus** : Testing: type, routine and special tests as per IS 2026-1981 for Distribution and Power transformers. Causes of failure: internal and external, types of faults: mechanical, electrical and magnetic. Trouble-shooting and remedies: trouble shooting charts for single phase and three phase transformers, Foundations : requirements for static machine foundations, factors governing them.

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## UNIT V

### Chapter 5 : Maintenance of Electrical Machine

#### Insulation

5-1 to 5-20

**Syllabus :** Classification of insulating materials as per IS 8504 - 1994. Factors affecting life of insulating materials. Measurement of insulation resistance and interpretation of condition of insulation. Transformer oil : properties, contaminating agents, tests. Strengthening insulations : weakening agents, cleaning, drying, re-varnishing, baking, impregnation, filtration. Measures to be taken to maintain the insulation resistance of electrical machines to healthy levels. History sheets of transformers and

induction motors : [Part A : machine specifications with component specifications (installation information, bearings, oil type, core weight etc. as applicable). Part B : date wise : observations of parameters such as voltage, current, temperature etc., symptoms, works carries out under maintenance]

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