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21222

3 Hours / 70 Marks

Seat No.

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15 minutes extra for each hour

- Instructions* – (1) All Questions are *Compulsory*.
- (2) Illustrate your answers with neat sketches wherever necessary.
- (3) Figures to the right indicate full marks.
- (4) Assume suitable data, if necessary.
- (5) Use of Non-programmable Electronic Pocket Calculator is permissible.
- (6) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

**Marks**

1. Attempt any FIVE of the following. 10
- a) List any four safety tools used in electrical installation.
- b) State the significance of safety in electrical installation.
- c) Write the name of fuse wire material and its main characteristics.
- d) Define dielectric strength and write its unit.
- e) Write two example of gases and liquid insulating material.
- f) State any two main factors considered for selection of cable in residential installation.
- g) State the need of earthing.

P.T.O.

- 2. Attempt any THREE of the following. 12**
- a) Describe the functions and operation of crimping tool and continuity tester.
  - b) Explain the electrical and mechanical properties of copper conductor.
  - c) Explain the effect of temperature rise on the properties of insulating material.
  - d) Explain the control of one fan using two switch and one regulator with suitable diagram.
- 3. Attempt any THREE of the following. 12**
- a) State the application of iron clad switches, MCBs in installation and write their specifications.
  - b) Differentiate between the wire and cable with respect to rating, cost, life and applications.
  - c) State and explain the insulation failure in underground cables.
  - d) Describe the process of cable laying in LT distribution system and also list material used in this process.
- 4. Attempt any THREE of the following. 12**
- a) Explain safety precautions while working on overhead lines.
  - b) Explain the ductility properties of conductor material and state its significance.
  - c) State the difference in characteristics of CRGO and HRGO silicon steel and write application of these material.
  - d) Draw the neat labelled diagram of plate earthing.
  - e) State the types of magnetic materials with examples.

- 5. Attempt any TWO of the following. 12**
- a) Explain the properties of soft and hard magnetic material with help of hysteresis loop and material name and application.
  - b) Explain electrical and chemical properties of insulating oil. State causes to deteriorate insulating oil strength.
  - c) Explain the procedure to test earthing resistance in domestic installation with suitable diagram.
- 6. Attempt any TWO of the following. 12**
- a) State the insulating material used electrical machine, write functions of these material and correlate it with their properties.
  - b) Describe cable jointing process in underground cable, list materials and tools used in this process.
  - c) State the factors on which earth resistance depends and give the values of earth resistance for domestic installation, substation and industrial installation.
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