

22328

12425

3 Hours / 70 Marks

Seat No.

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- Instructions* – (1) All Questions are *Compulsory*.
(2) Answer each next main Question on a new page.
(3) Illustrate your answers with neat sketches wherever necessary.
(4) Figures to the right indicate full marks.
(5) Assume suitable data, if necessary.
(6) Use of Non-programmable Electronic Pocket Calculator is permissible.
(7) 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) State the need for strictly following safety rules while working in electrical installations.
 - b) Draw the labelled hysteresis loop for hard steel material.
 - c) State any two electrical properties of insulating material.
 - d) Write two examples of solid and liquid insulating material.
 - e) Draw a labeled circuit diagram of a one lamp control circuit using one switch.
 - f) Enlist four harmful effects of improper earthing.
 - g) State different types of switches used in wiring installation.

P.T.O.

2. Attempt any THREE of the following : 12

- a) With neat diagram explain working of Miniature Circuit Breaker (MCB).
- b) Explain suitability of tungsten as an electrical conducting material for heating applications with respect to its electrical and mechanical properties.
- c) Name any two applications of following gases.
 - i) Nitrogen
 - ii) Hydrogen
 - iii) Sf6
 - iv) Air.
- d) Explain the process and need of crimping of cable joints.

3. Attempt any THREE of the following : 12

- a) Explain the use of following tools in carrying out electrical wiring installation:
 - i) Nose pliers
 - ii) Test lamps
 - iii) Crimping tool
 - iv) Continuity tester.
- b) State two applications along with the insulation class and its temperature for the following materials:
 - i) Bakelite sheets and
 - ii) PVC.
- c) Explain with neat labeled circuit diagram the staircase wiring in which a lamp is controlled from two different locations.
- d) Explain the uses of safety rubber hand gloves and rubber mats in electrical engineering.

4. Attempt any THREE of the following : 12

- a) State any four IE Rules to be followed in respect of safety while working on electrical installation system.
- b) Explain HRGO and CRGO. State benefits of CRGO for manufacturing of core.
- c) Explain the phenomenon of loss of magnetism.
- d) Describe with a neat sketch laying of underground cable by Direct laying Cable.
- e) Draw a neat connection diagram to measure earth resistance of an earthing pit and write procedure for the same.

5. Attempt any TWO of the following : 12

- a) State the properties of copper and aluminium which make them good conductors of electricity.
- b) Explain the reasons for failure of gaseous and solid dielectric materials used in electrical engineering application.
- c) State significance of earthing. Draw and explain pipe earthing. State the values of earth resistances for:
 - i) Substation
 - ii) Residential wiring
 - iii) H.T. Line
 - iv) L.T. Line

6. Attempt any TWO of the following :**12**

- a) Explain the criteria to be considered while installing an earthing system for an electrical installation.
- b) Write two examples and two applications for each example of the following class of insulation materials
 - i) Class Y
 - ii) Class F and
 - iii) Class H.
- c) Draw neat circuit diagram for below mentioned requirements in electrical circuit.
 - i) Three lamp controlled by separate switches.
 - ii) One lamp, one fan, one two pin socket controlled by separate switches.
