

22328

21819

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) 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) Write any two properties of good electrical insulation material.
 - c) Draw the labeled hysteresis loop for an electromagnetic material.
 - d) Define dielectric failure of electrical insulating material.
 - e) Name one gaseous and one liquid electrical insulation material.
 - f) Draw a labeled circuit diagram of a one lamp control circuit using one switch.
 - g) Define earthing related to electrical wiring system.

P.T.O.

- 2. Attempt any THREE of the following:** **12**
- a) Write any four of the IE rules to be followed in respect of safety while working in an electrical installation system.
 - b) Explain the suitability of copper as an electrical conductor with reference to its mechanical and electrical properties.
 - c) Explain the electrical and thermal properties of transformer oil those make it suitable as an electrical insulating medium.
 - 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 tools
 - (iv) Cutter.
 - b) Describe with reasons the failure of porcelain insulators.
 - 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) Explain the use of the following components in electrical wiring system and give specification of each:
 - (i) MCB
 - (ii) ELCB
 - b) Explain with justification two uses of each of two following as an electrical conductor:
 - (i) Brass
 - (ii) Silver
 - c) Explain the phenomenon of loss of magnetism.
 - d) Describe with sketches the process of laying of underground cables by the drawing in method.
- 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) Describe with neat circuit diagram the measurement procedure of earth resistance for an installation.
- 6. Attempt any TWO of the following:** **12**
- a) Explain the criteria to be applied in deciding the earthing system for an electrical installation.
 - b) State two insulators of following types along with their areas of application:
 - (i) Class A
 - (ii) Class E
 - (iii) Class H
 - c) Compare the casing / capping system of electrical wiring to concealed system of electrical wiring. On the basis of look, cost, life, safety retentivity of material and suitability for locations.
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