

# 22627

**12425**

**03 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 answer 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**

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| <b>1. Attempt any <u>FIVE</u> of the following:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <b>10</b> |
| <ol style="list-style-type: none"><li>a) Define wiring and schematic diagram.</li><li>b) Draw the symbol for –<ol style="list-style-type: none"><li>i) Motor starter</li><li>ii) Fan</li></ol></li><li>c) Differentiate between Industrial and Non-Industrial load.</li><li>d) State the classification of cable on voltage level.</li><li>e) Write the aim of public lighting installation.</li><li>f) State type of contracts used in contracting work.</li><li>g) State any two IE rules used in residential wiring installation.</li></ol> |           |

P.T.O.

- 2. Attempt any THREE of the following:** **12**
- a) Two lamp points, one ceiling fan, one 5 A socket are to be controlled by individual switches. Draw:
    - i) Wiring diagram
    - ii) Schematic diagram.
  - b) Explain general requirements of electrical installation as per I.S. 732-1982. (Any four)
  - c) Compare overhead service connection and underground service connection on any six points.
  - d) Draw single line diagram and wiring diagram of 3 ph, 415 V, 5 HP induction motor installation.
- 3. Attempt any THREE of the following:** **12**
- a) State and explain the ways of inviting tender.
  - b) Explain the design consideration and guidelines for electrical installation in commercial building.
  - c) Decide rating of main switch, motor switch, distribution board and cable for industrial installation of having 2 motor of 3 HP and 5 HP.
  - d) List the material required for overhead service connection (Any eight points).
- 4. Attempt any THREE of the following:** **12**
- a) A residential unit having following load:
    - i) 2 lamps of 60 Watt each
    - ii) 3 lamps of 40 Watt each
    - iii) 2 ceiling fan of 60 W each
    - iv) 5 socket of 6A having 100 W each.
    - v) 2 socket of 16 A having 1000 W each. Calculate:
      - 1) Total lighting load
      - 2) Total power load
      - 3) No of subckt for lighting fan and power circuit.
  - b) Explain design consideration for industrial electrical installations.

- c) Estimate the material required for 2 km, 11 KV overhead line to extend from existing line. Assume a span of 50 m.
- d) Draw a neat sketch of 11 KV H7 substations and enlist material required in the substation.
- e) Describe design consideration for street light estimation. Prepare list of material required.

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

- a) Explain the criteria for selection of starter for induction motors. Draw wiring diagram of induction motor connected to three phase supply through star/delta starter.
- b) State the different methods of cable termination for LT (415V) line. Explain any one method in detail.
- c) Explain the following terms regarding street lighting:
  - i) Glare
  - ii) Uniformity ratio
  - iii) Contrast
  - iv) Visual comfort.

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

- a) Explain with suitable example the following:
    - i) Quotation format
    - ii) Comparative statement
    - iii) Order format.
  - b) A road of 200 m long is required to be illuminated by providing 20 W CFL lamps with 200 candle power. The width of road is 4 m. Design a street lighting scheme and estimate the materials required. The scheme is to be estimated for a minimum of 0.8 lux of illumination.
  - c) A commercial hall of dimensions 12 m × 8 m is to be fitted with electric installation. Estimate quantity of material required. Assume height of ceiling to be 4 m. The wiring running at height of 3 m from floor. The load in hall is 10 fluorescent lamps of 40 W each, 5 fans of 60 W each and 5 No. of 5A sockets and 2 No. of 15 A socket outlets.
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