

# 17416

**11920**

**3 Hours / 100 Marks**

Seat No.

--	--	--	--	--	--	--	--

- 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 TEN of the following:**

**20**

- a) Classify electrical installations. Give example of each type.
- b) State any one IE rule related to electrical installation.
- c) Draw the symbols for following :
  - (i) Bell
  - (ii) Fan
  - (iii) Fuse
  - (iv) MCB
- d) Draw a wiring diagram for control of two lights and one fan.
- e) Draw symbols for :
  - (i) ICTP
  - (ii) Twin tubes
  - (iii) Exhaust fan
  - (iv) Geyser

P.T.O.

- f) Define service connection.
- g) State the features of overhead service connection.
- h) Enlist any four commercial electrification installation examples.
- i) Draw a single line diagram for a shop consisting of 2 fans, 4 tubes and 4 sockets of 6A.
- j) State the materials used for earthing in an industrial installation. Also state the size of earthing material used in industrial installation.
- k) State the method to decide the rating of MCB for protecting an induction motor.
- l) Enlist the types of electrical contracts.

**2. Attempt any FOUR of the following:**

**16**

- a) State the general requirements of electrical installation.
- b) Compare underground service connection and overhead service connection on the basis of aesthetics, maintenance, safety and initial cost.
- c) Draw:
  - (i) Bedroom wiring diagram
  - (ii) Staircase wiring diagram
- d) State the design considerations for electrical installation in a factory.
- e) State any four rules for electrification of a motor in an industry.
- f) Explain how machine current calculations are done in an industry.

**3. Attempt any TWO of the following :****16**

- a) (i) State the principles of circuit design in lighting and power circuit.  
(ii) State the procedure for the selection of rating of main switch and distribution board in residential building.
- b) State the purpose of earthing. Enlist the different types of earthing methods. Explain any one method in detail.
- c) Prepare a detail estimate to install  $3\phi$ , 440 V, 50 Hz, 5HP. Induction motor for a Jaw crusher in an crushing industry. The size of the crushing room is  $3.5\text{ m} \times 4\text{ m}$ . Assume the necessary and sufficient data. Draw installation plan and wiring diagram.

**4. Attempt any FOUR of the following:****16**

- a) Draw a neat labelled diagram for overhead service connection to a Bungalow.
- b) The main circuit wire in house is required to carry current 50 A on a single phase, 50 Hz AC supply. Determine the size of the wire if length of circuit is 50 meter.
- c) A Hall of  $4\text{ m} \times 6\text{ m}$  size is to be fitted with two tube, two fans and four 5A sockets. Draw installation plan and wiring diagram. Calculate length of casing capping and wire required.
- d) State the factors governing number of lighting sub circuits and power sub circuits in commercial electrification.
- e) Differentiate between residential and commercial installations.
- f) State commercial rate of any ISI mark company for each of following per unit:
  - (i) A 90meter bundle of  $6\text{ mm}^2$  FR house wire.
  - (ii) 3 pin plug - 6A
  - (iii)  $1\phi$  MCB - 10A
  - (iv)  $1\phi$  Socket - 6A

- 5. Attempt any FOUR of the following:** **16**
- a) Draw a neat labelled diagram for underground service connection.
  - b) List out general rules and guidelines for installation of residential electrification (any eight)
  - c) Differentiate between wires and cables.
  - d) Explain the meaning of administrative approval and technical sanction.
  - e) State the procedure for opening of tender.
  - f) State any four selection criteria for contractor.
- 6. Attempt any FOUR of the following:** **16**
- a) State the principles of execution of work.
  - b) State the types of wires and wiring methods used in residential electrification.
  - c) State the general requirements and selection factors for commercial installations.
  - d) Explain the arrangement of busbars with neat labelled diagram. State its use. State the materials used in busbars.
  - e) Differentiate between ELCB and MCB.
  - f) A room consists of following load.
    - Tube points 2 Nos - 40W each
    - Fan points 2 Nos - 100W each
    - 6A socket outlets - 4 Nos - 100W each
    - 16A socket outlet - 1 Nos - 1000WFind total light and power load. Find number of subcircuits required. Also find rating of main switch and D.B.
-