

# 17416

**21718**

**3 Hours / 100 Marks**

Seat No.

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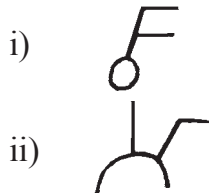
- Instructions* –
- (1) All Questions are *Compulsory*.
  - (2) Illustrate your answers with neat sketches wherever necessary.
  - (3) Figures to the right indicate full marks.
  - (4) Assume suitable data, if necessary.
  - (5) Use of Non-programmable Electronic Pocket Calculator is permissible.
  - (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) State meaning of following symbols.



b) Define Electrical Installation and give its classification.

c) Draw the symbols of the following.

i) Exhaust fan

ii) 15A socket outlet.

d) Define service connection and state types of overhead service connection.

e) Why underground service connections are costly than overhead service connection.

P.T.O.

- f) State function of
  - i) Ceiling rose
  - ii) Conduit
- g) Draw wiring diagram for 2 lamp and one fan controlled by individual switch.
- h) State function of Busbar and which material is used for busbar?
- i) State examples of commercial installation.
- j) State starters used for
  - i) 3- $\phi$  squirrel cage induction motor (3HP)
  - ii) D.C. motor
- k) State function of starter and ELCB. (Earth Leakage Circuit Breaker)
- l) Define contract and state its types.

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

- a) State any four general rules for Electrical Installation.
- b) Draw wiring and schematic diagram for one fluorescent tube, one lamp, 1 ceiling fan and one 3-pin socket (100 watts)
- c) Draw neat sketch of bare conductor operated service connection.
- d) State various types of Wiring Residential Electrical Installation and compare them. (Any four points)
- e) Explain design of number of lighting sub-circuits with example for residential installations.
- f) State criteria for selection of contractor. (Any 4)

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

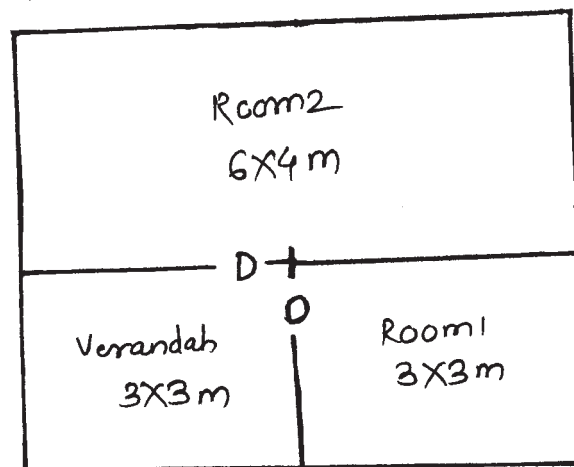
- a) Prepare schedule of material for underground service connection.
- b) Explain selection of main switch and distribution board for residential Electrical Installation.
- c) State stepwise design procedure for residential electrical installation.
- d) State difference between residential electrical installation and commercial electrical installation. (Any four)

- e) State any four general guidelines for Industrial installation.
- f) State rating in watts, cost and name of manufacturer company for following electrical point used in residential Installation
- Fluorescent tube
  - Ceiling fan
  - 15A socket outlet

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

16

- a) How rating of main switch and cable is selected for Industrial Installation.
- b) Draw Installation plan and calculate length load of phase wire for given installation in Fig. No. 1 having 3 ceiling fan, 3-fluorescent tubes, four 3-pin socket (6A) and 3 lamps.



**Fig. No. 1**

- c) State stepwise design procedure for commercial installation.
- d) Explain terms earnest money deposit and security deposit.
- e) Compare industrial electrical installation and residential electrical installation. (any four)
- f) State functions of
- Cable box
  - Guard wire
  - Shackle insulator
  - Stay wire used in service connection

5. Attempt any FOUR of the following:

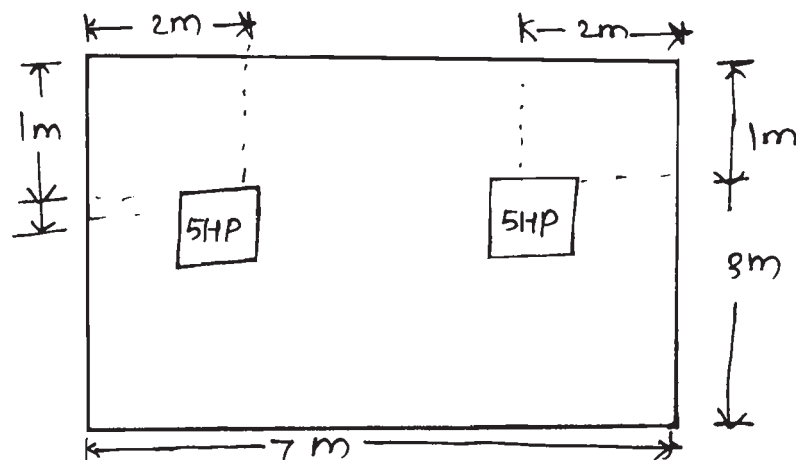
16

- A shop of size  $4 \times 6$  m is to be provided with 14 fluorescent tubes each 40Watts, 06 ceiling fans each 60 watts and 06 5Amp three pin sockets 100 watt.
  - Draw Installation Plan
  - Select the distribution Board for given load.
- Draw single line diagram with labelling for 5HP 3- $\phi$ , 440V, Induction motor to be operated on suitable starter.
- Explain selection of starters for Industrial Installation.
- Explain procedure for submission of tender.
- State factors deciding size of busbar chamber for commercial installation.
- Define Tender and state any three requirements of valid contract.

6. Attempt any FOUR of the following:

16

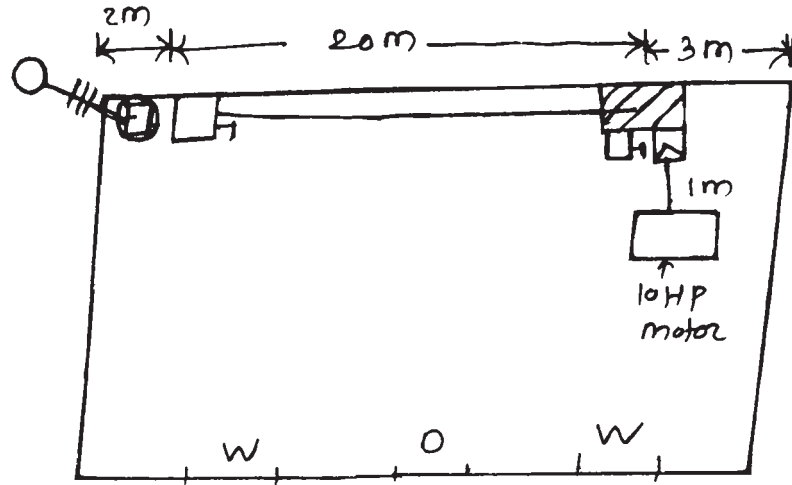
- What is necessity of earthing? Draw neat labelled sketch of plate earthing.
- Prepare schedule of material for given industrial installation. (Refer Fig. No. 2)



**Fig. No. 2**

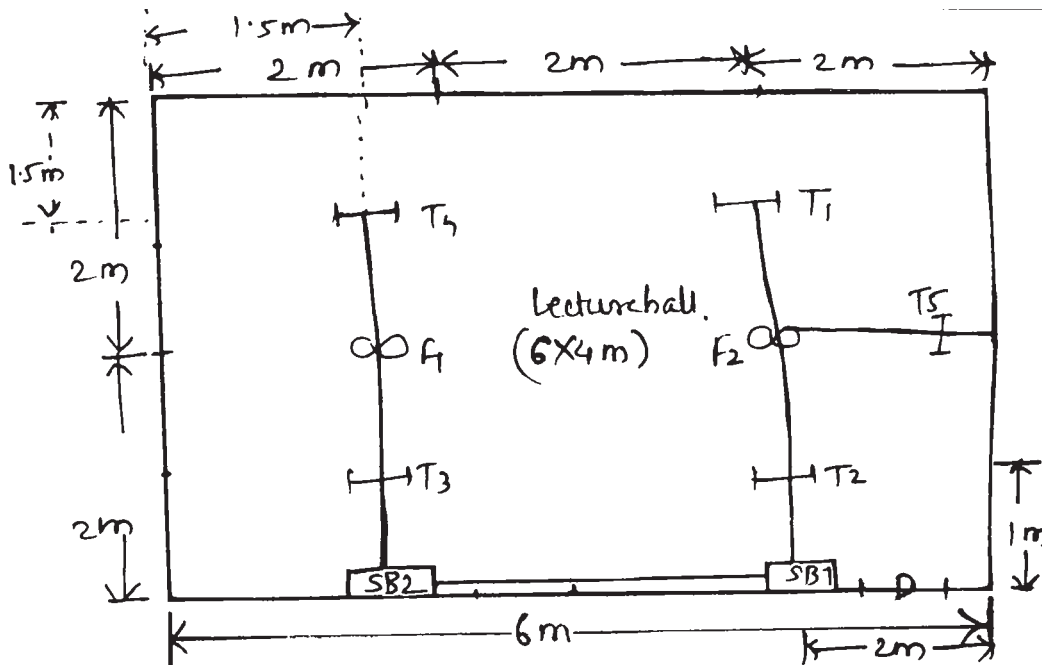
- Draw single line diagram (showing main switch distribution board) for commercial installation having 26 lighting points (10 fans, 10 fluorescent tube and six 3-pin socket) of load 1600 watts.

- d) State stepwise design procedure for industrial electrical installation.
- e) Select and calculate length of cable, select rating of main switch, selection and rating of fuse for given industrial installation.  
(Assume necessary data) (Refer Fig. No. 3)



**Fig. No. 3**

- f) Calculate and select length of phase wire, calculate length of neutral wire for given commercial installation. (Assume necessary data) (Refer Fig. No. 4)



**Fig. No. 4**