17416

16172

3 Hours / 100 Marks Seat No. | | | | | | | | |

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.

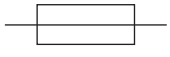
(6) Use of Non-programmable Electronic Pocket Calculator is permissible.

(7) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. Attempt any TEN of the following: **20**

a) Identify the following IS symbols –

(i) 

(ii) 

b) State the function of stay insulator and service pole.

c) State the purpose of MCB in residential installation.

d) State two factors deciding size of conduit.

e) Give four examples of commercial unit.

f) Define bus bar and state its use.

g) State two features of industrial loads.

h) State the meaning of security deposit.

i) Define the term 'Tender'.

P.T.O.

Marks

j) State the importance of electrical drawing.

k) Give the classification of electrical installation on the basis of location and purpose.

l) Define service connection.

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

a) State the types of wiring and explain one in brief.

b) Compare overhead service connection to underground service connection. (four points)

c) Draw a neat labelled diagram for underground service connection.

d) Draw a neat labelled diagram of pipe earthing.

e) State and explain the principles of circuit design in lighting and power circuits.

f) Explain the need and method of earthing of commercial installation.

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

a) Define the following terms as per IS:

(i) Wiring diagram

(ii) Schematic diagram

b) Prepare a schedule of material for overhead service connection for a residential load of single phase 3 kW from a service pole located at a distance of 60 m.

c) State any four IE rules used in residential wiring installation.

d) Explain the design considerations of commercial electrical installation.

e) State the principle of circuit design for motor loads.

f) State the criteria for selecting a contractor for electrical installation work.

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

a) Compare residential and commercial electrical installation.

b) State the factors governing no. of lighting and power circuits in commercial installation.

Marks

c) Write the procedure to prepare a design for industrial installation.

d) Decide the number of sub circuits and draw single line diagram with specification for five 3 ϕ, 10 HP, 440 V squirrel cage IM.

e) State the sequence to be followed in preparing estimate for a commercial installation.

f) What are the different types of contracts? Explain any one.

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

a) Estimate quantity of material and calculate the cost for casing capping wiring system used in a house, the plan of which is shown in Figure No. 1. Assume height of ceiling of 3.5 m and one plug point is to be provided in each room. Assume suitable rates.

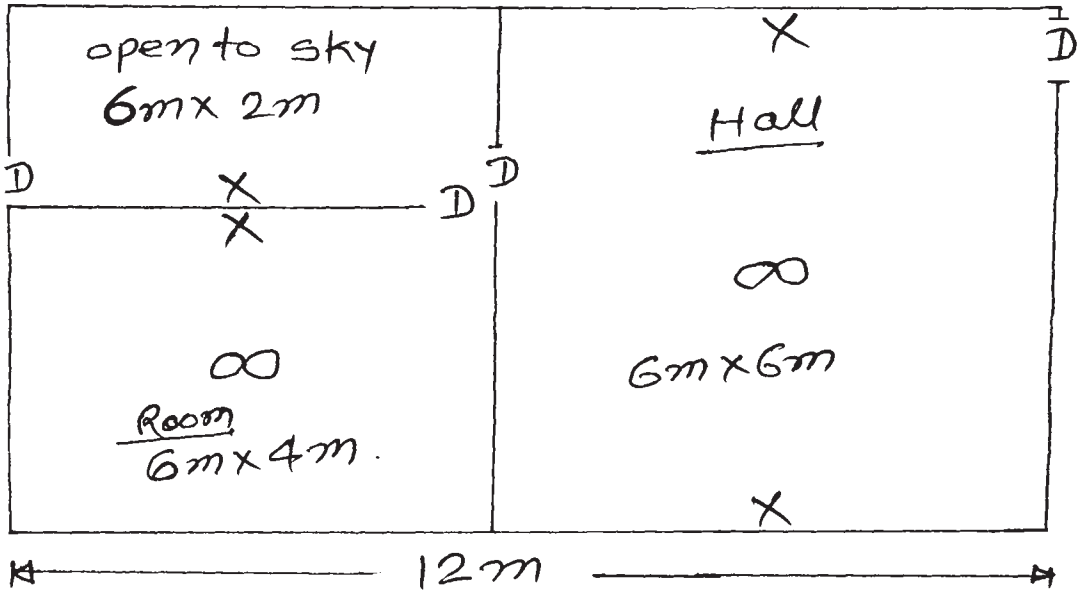


Fig. No. 1

b) A 1 HP, 3-phase 400 V motor, 5 HP 3-phase 400 V motor, 0.75 HP 1-phase 230 V motor, 3 HP 3-phase 400 V motor are proposed to be connected to ac supply. Calculate full load current, starting current, rating of main switch and selection of cable and draw single line diagram for the same.

c) State the sequence to be followed for preparing estimate for a residential installation.

Marks

6. a) **Attempt the following:** **4**

Describe the procedure for execution of work.

b) **Attempt any ONE of the following:** **12**

(i) A hall whose dimensions are 20 m × 15 m is to be fitted with an electrical installation of following load –

- Fluorescent lamps – 16 Nos.
- Ceiling fan – 10 Nos.
- Plug points – 06 Nos.

1) Draw a layout and show the position of lamps, fans etc., Calculate the rating of equipments.

2) Prepare a schedule of material.

3) Find out cost of work.

(ii) In a workshop, one 15 HP, 3-phase, 440 V, 50 Hz motor is to be installed. Prepare the estimate required for PVC surface conduit wiring. The plan of the workshop is shown in Figure No. 2.

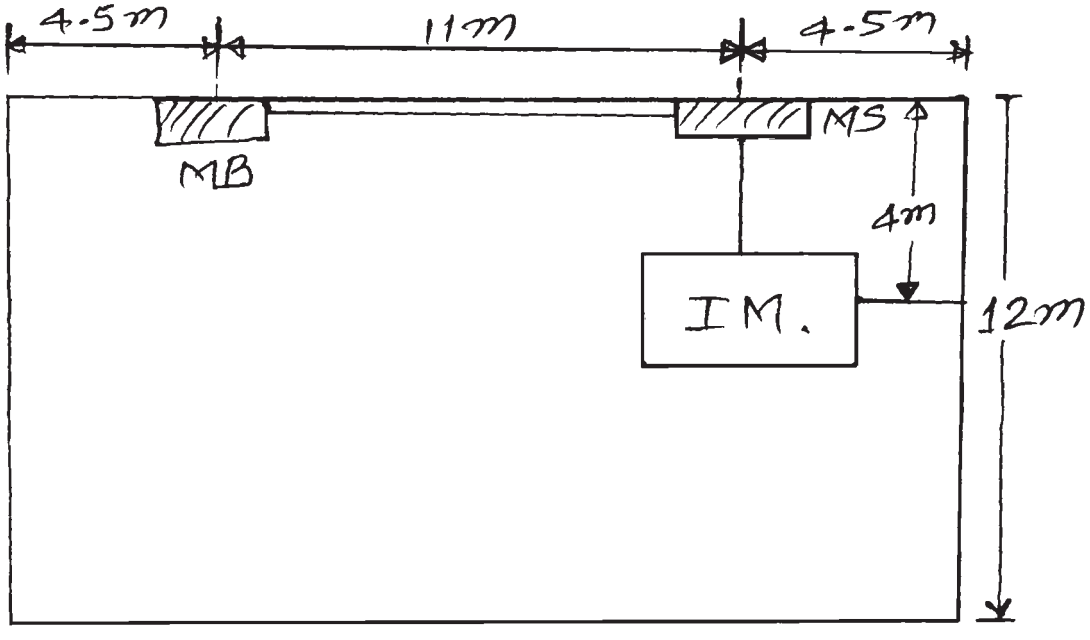


Fig. No. 2