

# 22627

**23124**

**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 answer with neat sketches wherever necessary.
  - (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 FIVE of the following: **10****
- a) Draw the symbol for –
    - i) Earthing
    - ii) Fuse
  - b) Define the terms with reference to I.S.
    - i) Circuit diagram
    - ii) Wiring diagram
  - c) Compare residential and industrial installation on any two points.
  - d) State the classification of cable on voltage levels.
  - e) Define terms :–
    - i) Tilt Angle
    - ii) Light output ratio (LOR).
  - f) State any four qualities of good contractor.
  - g) State the types of service connection.

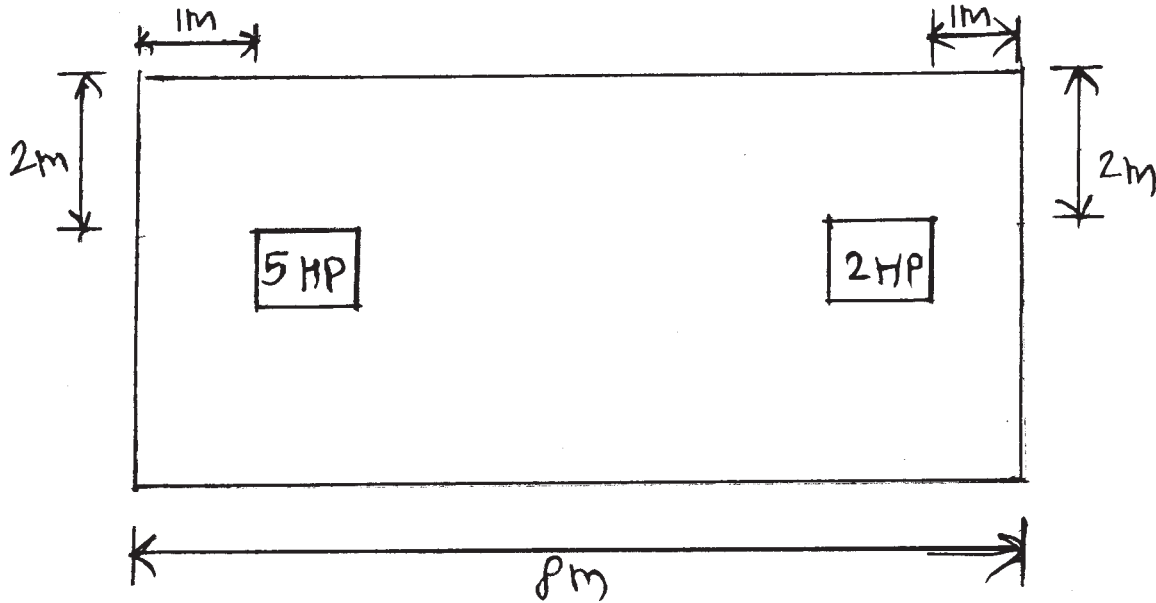
P.T.O.

- 2. Attempt any THREE of the following:** **12**
- a) Draw the wiring diagram and single line diagram for control of two fan and two lamp by individual switches.
  - b) Explain the procedure of estimation of electrical wiring of residential installation with suitable example.
  - c) A residential unit is newly constructed having following load –
    - i) 7 lamp of 30 w
    - ii) 5 ceiling fan 65 w
    - iii) 5 socket of 6 Amp having 200 watt
    - iv) 1 socket of 16 Amp having 2 kw.Calculate :-
    - (1) Total light load
    - (2) Total power load
    - (3) Size of conductor
    - (4) Number of sub circuit.
  - d) What are the different types of wiring system? State suitable application for each.
- 3. Attempt any THREE of the following:** **12**
- a) State methods of opening of tender and explain any one method.
  - b) How insulation resistance is tested between conductor?
  - c) Draw single line and wiring diagram of 3 phase, 415 V, 5 HP induction motor installation.
  - d) List the material required for overhead service connection.

4. Attempt any THREE of the following:

12

- a) Explain the general requirement of electrical installation as per I.S. 732-1982.
- b) Prepare the schedule of material for industrial load as per Figure No. 1.

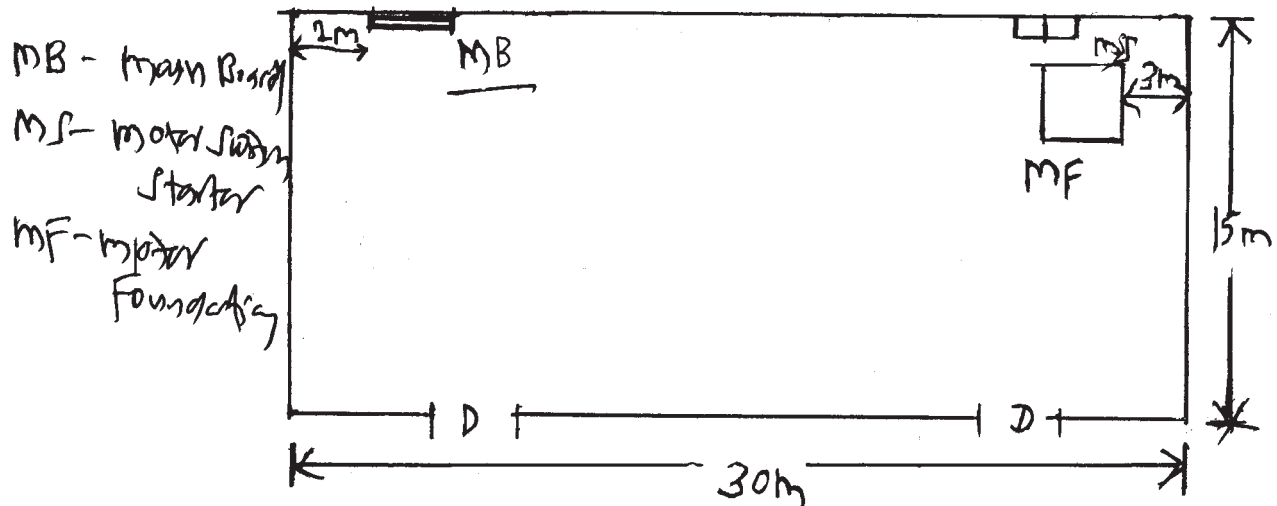
Fig. No. 1

- c) List out the material use for H.T. 11 kV and L.T. 415 V overhead line.
- d) Draw the single line diagram of L.T. substation (415 V).
- e) Explain the following terms regarding street lighting –
  - i) Glare
  - ii) Uniformity Ratio
  - iii) Contrast
  - iv) Visual comfort.

5. Attempt any TWO of the following:

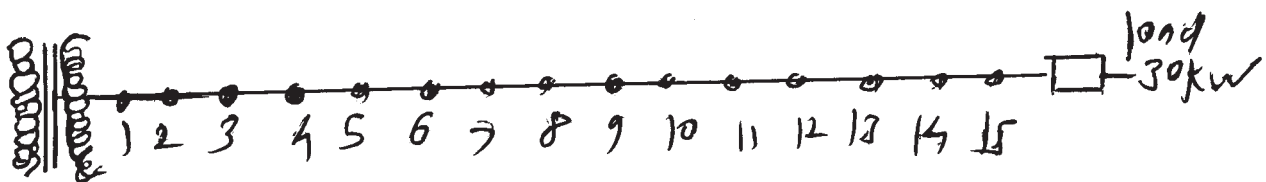
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- a) In a workshop, one 15 HP 400 Volts, three phase 50 Hz motor is to be installed. Prepare the estimate of quantity of material required and its cost with a layout of the wiring. The plan of the workshop is shown in Figure No. 2.

Fig. No. 2

- b) Estimate the material required for a 750 m, 415/240 V three phase line with four wire in vertical configuration. The line emanate from substation to feed a load of 30 kW. Take the span between two poles as 50 m. The size of conductor is ACSR 6/1  $\times$  2.599 mp.

Plan of overhead line is in Figure No. 3.

Fig. No. 3

- c) Prepare the list of material and device for public lighting installation.

6. Attempt any TWO of the following:

12

- a) Prepare the contract document for material supply for 11 kV substation installation.
- b) i) Explain the characteristic of –  
 (1) Incandescent lamp  
 (2) Florescent lamp  
 (3) High pressure sodium vapour lamp.
- ii) State the objectives of outdoor (Exterior) lighting.
- c) Figure No. 4 shows the plan of a small flat. The flat is to be provided with electrical connections. The position of light and fan points and switch boards have been shown in the Figure No. 4.
- i) Decide the number of sub circuit and show these in the installation plan.
- ii) Calculate the size and length of wire required for wiring installation.
- iii) Estimate the quantity of material, its cost and labour cost for teak wood batten wiring system.

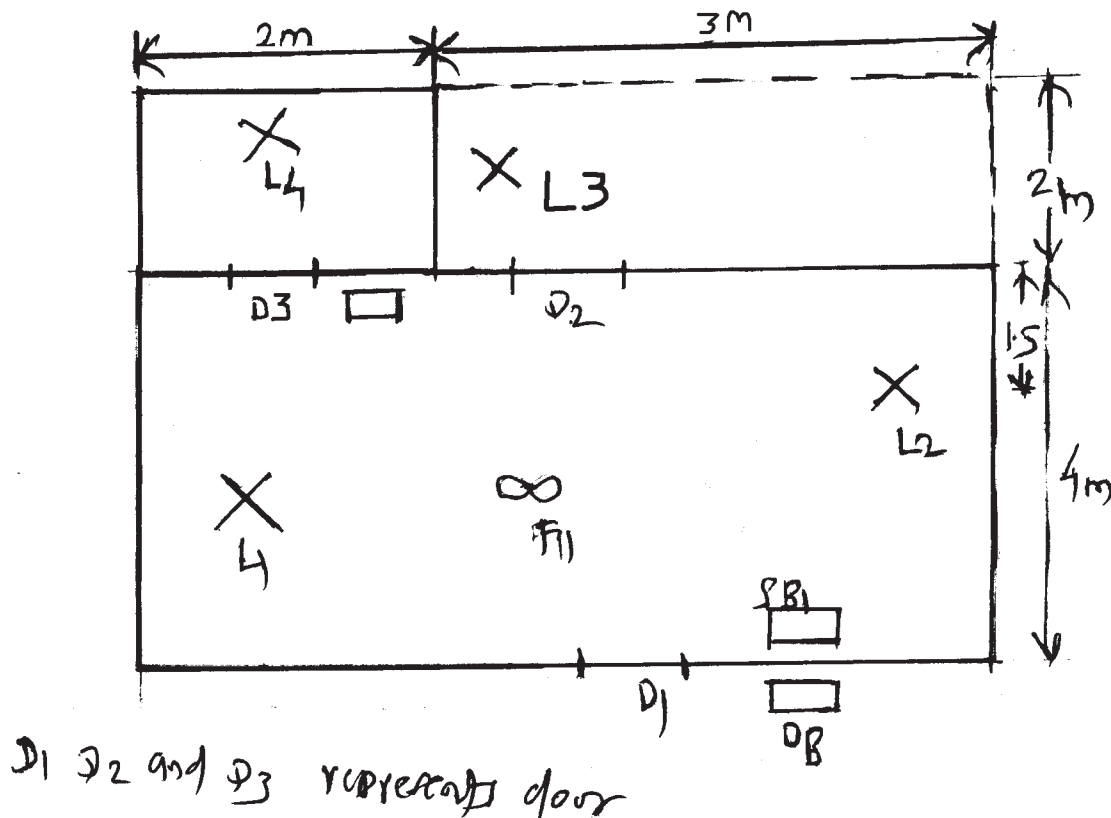


Fig. No. 4