

17416

11718

3 Hours / 100 Marks

Seat No.


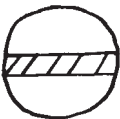
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- Instructions* –
- (1) All Questions are *Compulsory*.
 - (2) Illustrate your answers with neat sketches wherever necessary.
 - (3) Figures to the right indicate full marks.
 - (4) Assume suitable data, if necessary.
 - (5) Use of Non-programmable 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) Draw the symbols of the following:
 - (i) Exhaust fan
 - (ii) Plug and Socket
- b) State IE rule 29 related to electrical installation.
- c) State the meaning of following symbols:
 - (i) 
 - (ii) 
- d) What is service connection?
- e) State the purpose of ELCB in residential installation.

P.T.O.

- f) Give two points of differentiation between underground and overhead service connection.
- g) State any two examples of commercial installation.
- h) State any two difference between residential and commercial wiring.
- i) Name the starters used for following motors:
 - (i) 15hp, 3phase squirrel cage induction motor.
 - (ii) D.C. shunt motor
- j) State the meaning of following terms:
 - (i) Security deposit
 - (ii) Earnest money
- k) List the types of internal wiring.
- l) State the permissible limits for earth resistance in industrial installation.

2. Attempt any FOUR of the following:

16

- a) Write any four IE rules relating to lighting loads to be followed in electrical installation.
- b) State commercial rate of each of following for per unit:
 - (i) Single phase, 15Amp, ICDP
 - (ii) Single phase - 15A, MCB
 - (iii) Flexible wire bundle
 - (iv) Power three pin plug
- c) State any four advantages and two disadvantages of underground service connection.
- d) What is tender? State its types.
- e) One light point, one ceiling fan, one 5A socket outlet are to be wired. Switches are to be provided on a single switch board. Draw the following:
 - (i) Wiring diagram in looping - in system
 - (ii) Single line diagram for (i)
- f) Draw a labelled diagram for underground service connection.

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

- a) Explain how number of circuits and subcircuits are determined in residential wiring.
- b) Draw a labelled diagram for overhead service connection.
- c) State any six requirements of valid contract.
- d) State the sequence to be followed for the preparation of estimate of commercial electrical installation.
- e) Define the following terms as per IS :
 - (i) Wiring diagram.
 - (ii) Schematic diagram
- f) Draw the details of distribution board having separate energy meter for lighting load and power load.

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

- a) State any four general rules for installation of residential electrification.
- b) Draw a single line diagram for 15hp, three phase, 440V, Induction motor to be operated on suitable start.
- c) Write complete procedure of submission and opening of a tender.
- d) State any four factors on which selection of contract depends.
- e) Explain how comparative statement is prepared after opening of tender.
- f) State any four important factors, which should be considered for economical execution of electrical installation work.

5. Attempt any TWO of the following:

16

- a) A shop of size $4\text{ m} \times 8\text{ m}$ is to be provided with 14 twin tube light fittings of 80 watt each and 7 ceiling fans of 60 watt each having sweep of 800 mm. Switch boards consist of 14 nos. 6 Amp sockets of 100 watts. Design and draw installation plan using standard IS symbols for twin tube light fittings, ceiling fans, calculate the number of sub-circuit required. Show the position of switch boards on installation plan.
- b) What is industrial load? Compare it with residential load on any two points. Also write any five important points of motor wiring.
- c) Draw the wiring diagram for the industrial load shown in Figure No. 1 show all ICTP, starters cables with ratings. Assume suitable power factor and efficiency and squirrel cage induction motors.

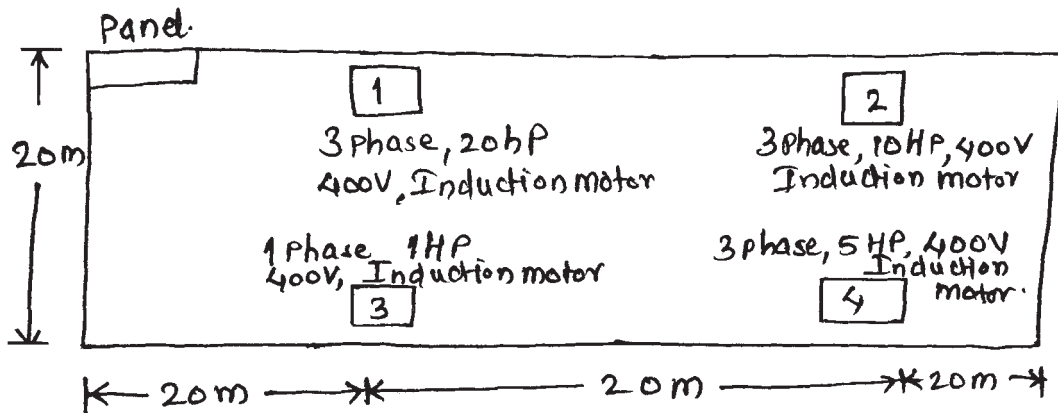
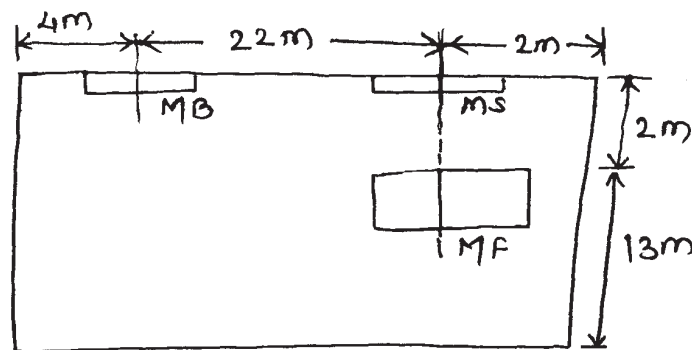


Fig. No. 1

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

16

- Calculate the no of circuits for four, 3 phase, 10 HP, 400 V, squirrel cage induction motor. Justify your answer.
- Also state the procedure to calculate motor current in any industrial installation.
- In a workshop 10 h.p.(metric), 415 V, three phase, 50 Hz motor is to be installed. Prepare the estimate required for the motor installation assuming PVC surface conduct type of wiring. The detailed plane is as shown in Figure No. 2.



MB - Main Board, MS - Main switch
 MF - Motor foundation - 0.6 x 0.6 x 0.6 m.

Fig. No. 2

- Prepare a schedule of material for electrical wiring of industrial load as shown in Figure No. 1 of Q. 5 (c).
- State the rating of lamps, fan and socket outlet points used in residential installation.
- State the need of earthing. Draw neat diagram of plate earthing.