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21819

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 symbols of the following:
 - (i) Exhaust fan
 - (ii) Bell
- b) State any two difference between residential and commercial wiring.
- c) State IE rule 29.
- d) List two examples of commercial installation.
- e) List the types of internal wiring.
- f) State two factors deciding size of conduit
- g) Define service connection.
- h) State the functions of Bus-bar.
- i) State the importance of electrical drawing.

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- j) State the necessity of earthing.
- k) List the types of contract.
- l) Differentiate between wire and cable.
- m) State the functions of following in motor wiring circuit:
 - (i) Motor switch
 - (ii) Main switch
- n) Define service Board.

2. Attempt any FOUR of the following: 16

- a) Prepare schedule of materials for underground service connection.
- b) List general requirements of electrical installation (any eight).
- c) State the principles in design of lighting and power subcircuits.
- d) Explain the procedure for submission of tender.
- e) State any four IE rules used in residential wiring installation.
- f) Predict the types of starters required for following motors:
 - (i) I.M of fractional K.W rating.
 - (ii) I.M of medium rating (up to 15 KW)
 - (iii) I.M with high rating.
 - (iv) Slip ring I.M of high rating.

3. Attempt any FOUR of the following: 16

- a) Compare overhead and underground service connection.
- b) Define the following terms as per IS:
 - (i) Wiring diagram
 - (ii) Schematic diagram
- c) State the sequence followed to prepare the estimate for commercial electrical installation.

- d) State the need of earthing and draw neat labeled sketch of pipe earthing.
- e) State the meaning of:
 - (i) Earnest Money deposit
 - (ii) Security Deposit.
- f) Write complete procedure of submission and opening of tender.

4. Attempt any FOUR of the following: 16

- a) Draw a labeled diagram of underground service connection.
- b) State the purpose of maintenance of electrical installation.
- c) Draw and label multiline diagram and single line diagram for two lamps, two fans and 5 amp socket connected to single phase supply.
- d) State the criteria for selecting contractor.
- e) State the design considerations of commercial installation.
- f) State the sequence to be followed to prepare estimate of factory unit.

5. Attempt any FOUR of the following: 16

- a) What is MCB? Give any two functions of MCB.
- b) State the purpose of following in conduit wiring:
 - (i) Elbow
 - (ii) Conduit Box
 - (iii) Bushing
 - (iv) Nipple.
- c) State sequence followed to prepare appropriate estimation for residential installation.
- d) Define Busbar and draw and label diagram showing its arrangement and explain it.
- e) Draw and label single line diagram for 3 phase induction motor connected to supply with star delta startor.

- f) A 10 kW, 440 V, 3 ph, 50 Hz I.M is to be installed in a workshop. The main board is 15 m away from the main switch and starter of a motor. The main switch and starter are mounted on one board and are 1.5 m away from the motor foundation. Show the layout of wiring and estimate quantity of material required.

6. Attempt any TWO of the following:

16

- a) (i) State any four rules for motor wiring.
(ii) Give the procedure to calculate motor current in any industrial installation.
- b) Prepare a complete estimate to install a 3-phase 400 V, 50 Hz, 3 Hp induction motor to be used for grinding purpose in a small workshop having room size of 3 m × 3 m. Assume necessary data required for the estimation. Draw installation plan and wiring diagram.
- c) A college canteen hall has 6 m × 4 m size. It is provided with the following electric load:
- (i) 12 nos of tube lights 40 watt each.
(ii) 6 nos of fan points of 60 watt each.
(iii) 4 nos of plug points of 240 watt each.

Design and draw electrical installation scheme and estimate quantity of material and their cost required for casing capping wiring system.
