



C16-EE-404

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BOARD DIPLOMA EXAMINATION, (C-16)

AUGUST/SEPTEMBER—2021

DEEE - FOURTH SEMESTER EXAMINATION

ELECTRICAL INSTALLATION AND ESTIMATION

Time : 3 hours]

[Total Marks : 80

PART—A

3×10=30

- Instructions :**
- (1) Answer **all** questions.
 - (2) Each question carries **three** marks.
 - (3) Answers should be brief and straight to the point and shall not exceed five simple sentences.

1. State the reasons for not using fuse in neutral wire.
2. What are the effects of electric shock?
3. List the uses of cables.
4. Determine the size of the cable for the given 3-phase 10 HP, 415 V, 50 Hz Induction motor. Assume efficiency as 80% and power factor as 0.8 lag.
5. What is meant by sub-circuit and how can you segregate number of sub-circuits in a wiring installation?
6. What are the materials required for submersible pumps wiring installation?
7. State any six main components of OH line.

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8. List the materials that are to be used in earth pit surrounding the earth electrode.
9. State the IE Rules for the safety of industry.
10. What are the tests to be conducted before energisation of newly installed wiring installation?

PART—B

Instructions : (1) Answer *any five* questions.
 (2) Each question carries **ten** marks.
 (3) Answers should be comprehensive and criterion for valuation is the content but not the length of the answer.

11. (a) State the reasons for fire accidents in electrical installations. 5
 (b) Explain surface conduit wiring used in domestic installation. 5
12. Prepare an estimate for the quantity of material required of the building plan given below and is to be provided with concealed conduit wiring system, the height of the building is 3.5 m. Assume any missing data. 10

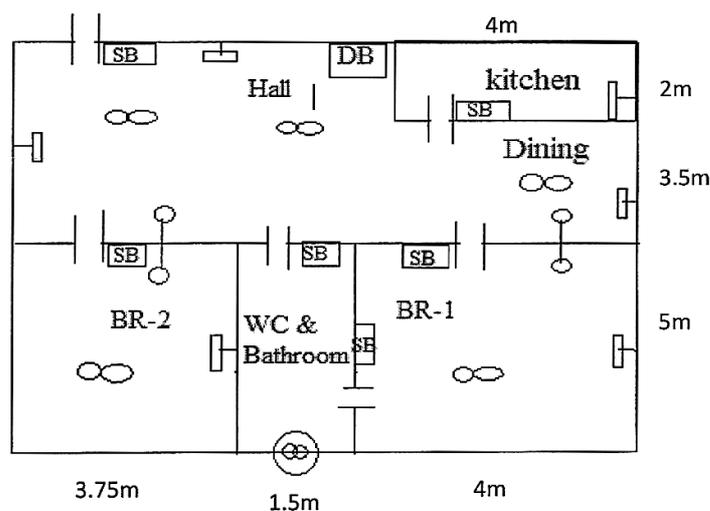


Fig. 1: Plan of the Building

- 13.** An Agricultural Submersible pump of 5 HP, 3-phase, 400 V, 50 Hz is to be electrified. The depth of the pump in the well is 35 m below the ground. The distance between the nearest 3-phase, 4 wire LT-pole and switch board is 6 m and is located 2.5 m away from the tube well in a room of 3×2.5 m. Estimate the material required and draw the layout as well as single line diagram of the installation. Assume the missing data if any. 10

- 14.** A 3 HP, 415 V, 3-phase, 50 Hz squirrel cage induction motor is to be installed in a flour mill. Estimate the quantity of materials required as per the layout of wiring diagram, efficiency and power factor of the motor are 85% and 0.9 respectively. The height of the building is 3.5 m. Assume any missing data. 10

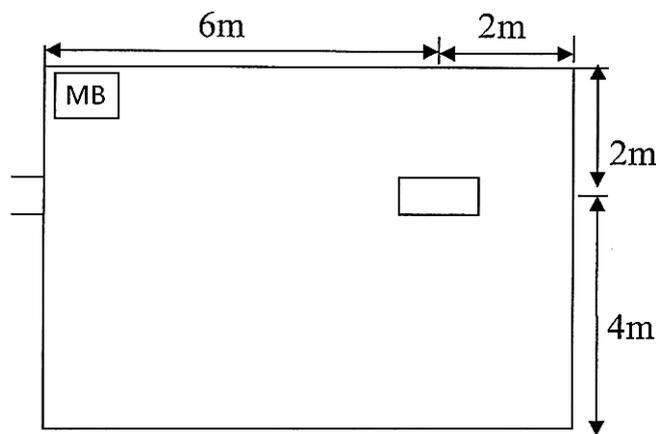


Fig. 2: Plan of the Building

- 15.** Prepare the quantity estimate of various materials and accessories required for 2 km length of a 11 kV line with 7/2.59 ACSR conductors over PSCC poles of 9 m height and 70 m span. Assume 2 cut points and 90° angle point. 10

- * **16.** Draw a neat sketch of pipe earthing showing standard dimensions and estimate the materials required for the installation. 10

- 17.** Draw a neat sketch of 100 kVA, 11 kV/415 V, 3-phase pole mounted distribution transformer substation and estimate the materials for the erection of the substation and also show the 3 earth pits in the yard specifying the distance between them as per the standard practice of NEC. 10

- 18.** (a) Explain the need for load survey in a rural electrification scheme. 5
- (b) The load particulars of the village are given below. Find the rating of the Distribution transformer to be installed in the load centre. 5
- (i) Agricultural load -25 HP-1 No.
 - (ii) Domestic load -600 W each - 75 No.
 - (iii) Commercial load -5KW each -3 No.
 - (iv) Small scale industrial load each - 3 KW - 5 No.

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