

7447

BOARD DIPLOMA EXAMINATION, (C-20)

MAY—2023

DEEE - FOURTH SEMESTER EXAMINATION

ELECTRICAL INSTALLATION AND ESTIMATION

Time : 3 Hours ]

[ Total Marks : 80

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**PART—A**

3×10=30

- Instructions :** (1) Answer **all** questions.  
(2) Each question carries **three** marks.

1. State the use of standard wire guage.
2. Why a fuse is not used in neutral?
3. List the electrical materials used in wiring the service mains.
4. Calculate the size of cable for the given 3-phase, 5 HP, 415 volts, 50 Hz induction motor. Assume efficiency as 80% and power factor 0.8 lag.
- \* 5. Draw a neat sketch of weather proof service wire connection.
6. What is the purpose of cross arms and guarding in overhead lines?
7. Compare pole mounted and plinth mounted transformers substations in any three aspects.
8. List the types of earthing with application.
9. State the necessity of load survey in rural electrification scheme.
10. \* State IE rule 67 relating to connection with earth.

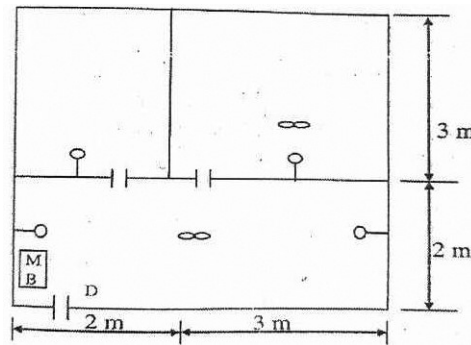
- Instructions :** (1) Answer **all** questions.  
 (2) Each question carries **eight** marks.

11. (a) Describe the procedure of first aid for shock treatment to an electrocuted person.

**(OR)**

(b) What are the merits and demerits of concealed conduit wiring system?

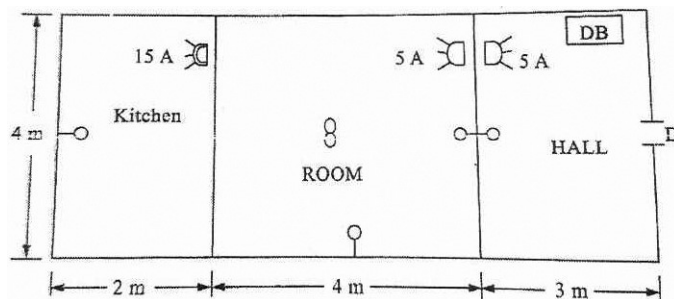
12. The plan of a residential building is shown in Fig. given below. It is to be provided with CTS system of wiring. Estimate the materials required and its cost.



Assume building height = 3.0 m, wall thickness = 0.35 m and other missing data.

**(OR)**

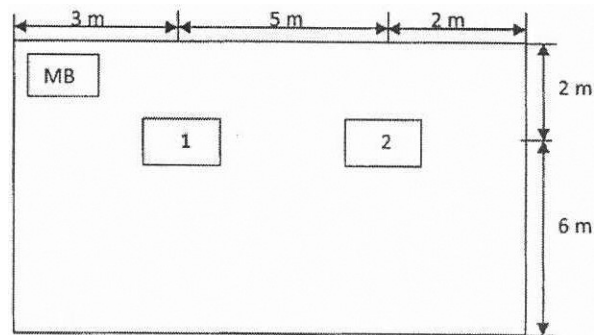
Estimate the quantity and cost of materials required for PVC surface conduit wiring system in a residential building as shown in Fig.



Assume building height = 3.0 m, wall thickness = 0.35 m and other missing data.

13. The following\* electrical motors are to be installed in the electrical laboratory of the plan shown in Fig. given below. Make a neat single-line diagram of power wiring of electrical machines and prepare the list of materials required with cost. The height of the building is 3.5 m. Assume missing data, if any :

- (a) A 3-phase, 5-HP, 415-V induction motor  
 (b) A 3-phase, 7.5-HP, 415-V induction motor



(OR)

Estimate the material required for the erection of irrigation pump set of 7.5 HP, 3-phase, and 400 V. Assume the distance from the existing LT pole to the pump set is 20 m and the pump room dimensions are 2 m × 3 m and 3.5 m height. Assume any missing data.

14. Prepare the quantity estimate of various materials and accessories required per 2 km length of a 11 kV line with 7/2.59 ACSR conductors over PSCC poles of 8 m height at 80 m span between poles. Assume any missing data.

(OR)

Estimate the quantity of material required to provide pipe earthing in a small-scale industry with a neat diagram.

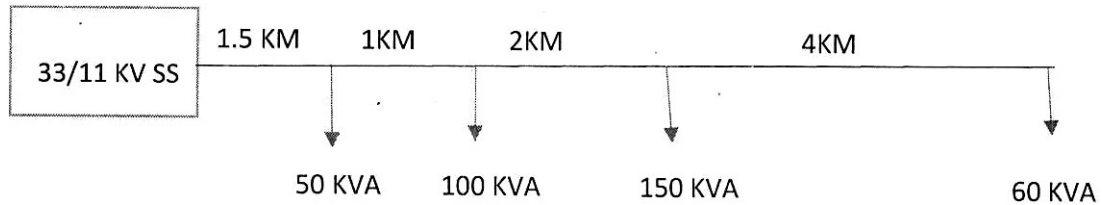
15. Describe the following tests in detail :

- (a) Continuity of wiring in an electrical installation  
 (b) Insulation resistance between conductors

\*

**(OR)**

Calculate the VOLTAGE regulation of a 11 kV line with 7/2.59 mm ACSR conductor with the following load particulars as shown. Assume regulation constant to be 900.



**PART—C**

10×1=10

- Instructions :** (1) Answer the following question.  
(2) The question carries **ten** marks.

- 16.** Prepare the schedule of materials required for 65 kVA, 11 kV /400 V pole mounted substation. Draw a neat sketch.

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