

7447

BOARD DIPLOMA EXAMINATION, (C-20)
NOVEMBER/DECEMBER—2022

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. List different types of main switches and state its uses.
2. List any six surface conduit wiring accessories.
3. Define service mains and list different types of service mains.
4. State any three merits and demerits of CTS wiring system.
5. List different types of starters used for AC motors.
6. State any six main components of pole mounted transformer.
7. Calculate the number of poles and cross arms required for 11 kV transmission line of 2 km distance with a span of 80 m.
8. List the types of insulator used in over headlines.
9. List different tests to be conducted before energizing a newly constructed electrical installation.
10. State IE rule 33 regarding earthed terminal on consumer's premises.

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PART—B

8×5=40

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

11. (a) Explain surface conduit wiring system with legible sketches.

(OR)

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

12. (a) In a flour mill, one 10 HP, 400 V, 3-phase, 50 Hz squirrel cage induction motor is to be installed. Draw single line diagram of wiring and estimate the quantity of material required. Plan of flour mill is shown in Figure below. Assume missing data if any.

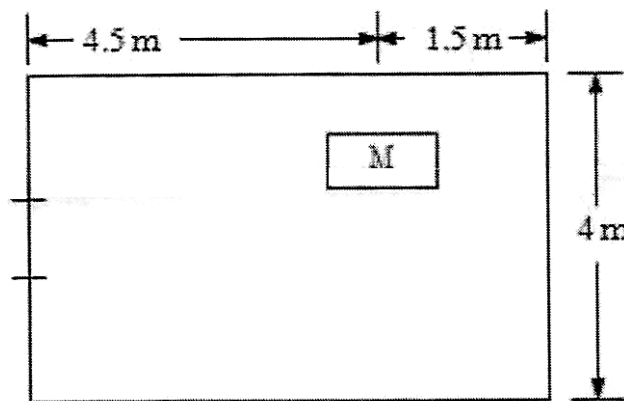


Figure: Plan of flour mill

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(OR)

(b) An agricultural pump set of 5 HP, 415 V, 3-phase, 50 Hz is to be installed for a well. The height of pump shed is 2 m. The distance between the pump shed and LT line pole is 20 m. Efficiency and power factor are 85% and 0.9 lagging respectively. Estimate the quantity of material required for connecting the pump set to the lines and draw the line diagram of wiring installation.

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13. (a) Estimate the quantity of material required for PVC surface conduit wiring system in a house whose plan is shown in Figure below. Assume missing data if any.

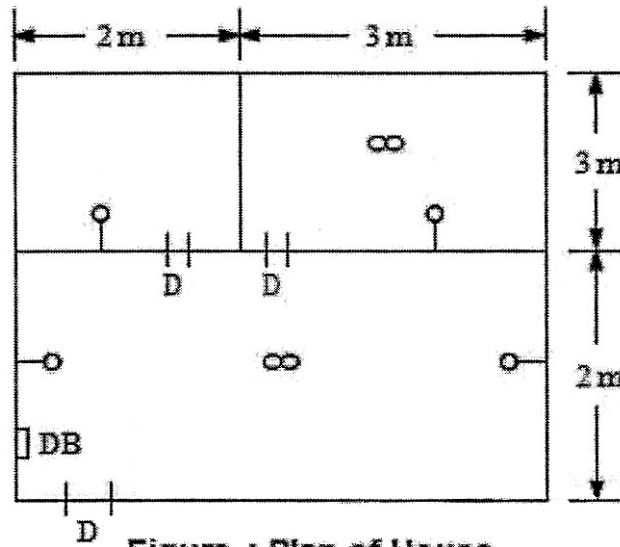


Figure : Plan of House

(OR)

- (b) Estimate the quantity of material required for CTS system of wiring for residential buildings whose plan is shown in Figure below. Assume missing data if any.

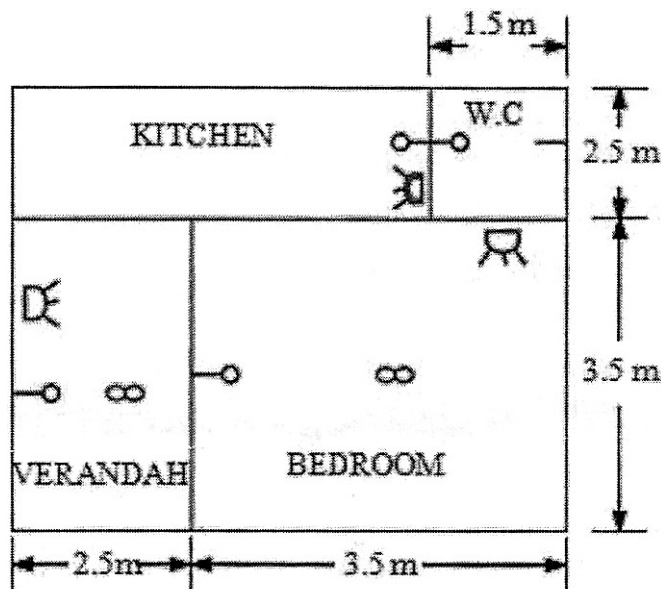


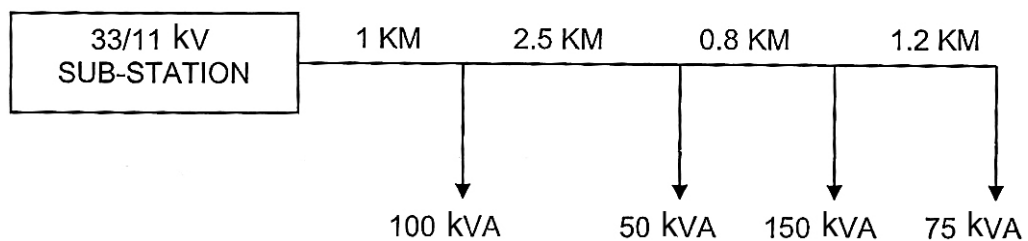
Figure: Plan of House

14. (a) Estimate the quantity of materials required for a 11 kV, 3-phase overhead line with $6/1 \times 2.59$ mm ACSR conductor for 1 km long on 8 m PSCC poles. The span between two poles is 75 m. Assume missing data if any.

(OR)

- (b) Draw a neat sketch of pipe earthing and estimate the quantity of materials required.

15. (a) Calculate the voltage regulation of a distribution line with $7/2.59$ mm ACSR conductor which is emanating from 33/11 kV substation. The connected distribution transformers and distances are shown in figure below.



(OR)

- (b) Describe the test procedure for conducting insulation test of domestic wiring between conductors with legible sketches.

PART—C

10×1=10

Instructions : (1) Answer the following question.

(2) The question carries **ten** marks.

(3) Answer should be comprehensive and criterion for valuation is the content but not the length of the answer.

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16. A building is*to be provided with PVC concealed conduit wiring and the details of load are as given below. Assume missing data if any.

Location	Lamp (60 W)	Fan (80 W)	5 A Socket outlet	15 A Socket outlet
Varandah	1	1	1	—
Hall	2	2	1	1
Bed Room	2	1	1	—
Kitchen	1	—	1	1

- (a) Design the specifications of —
- (i) Main switch and distribution Board.
 - (ii) Conductor from meter board to distribution.
 - (iii) Conductor for sub-circuits.
- (b) Draw the wiring diagram for the entire load.

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