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C20-EE-404

7447

BOARD DIPLOMA EXAMINATION, (C-20)

JUNE/JULY—2022

DAE – 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 any six accessories of conduit wiring.
2. State the reasons for not using fuse in neutral wire.
3. State any three merits of concealed conduit wiring system.
4. Define service main and list any three specifications of service main.
5. Calculate the size of the cable for the given three phase 10 HP, 415 V induction motor. Assume efficiency of the motor as 85% and power factor as 0.8 lag.
6. List any six main components of 11 kV overhead line.
7. Determine number of poles and number of stay sets required for 1 km long 11 kV overhead transmission line with a span of 75 m.
8. List the materials that are used in the earth pit surrounding the earth electrode.
9. Write down the permissible earth resistance values for (a) 1 HP, 1-phase, 230 V, 50 Hz AC motor, (ii) flour mill of 10 HP, 3-phase AC motor and (iii) 10 MW power generating plant.
10. State IE Rules for the safety of industry.

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PART—B

8×5=40

- Instructions :
- (1) Answer either (a) or (b) from each question.
 - (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 CTS wiring system with legible sketches.

(OR)

(b) Explain the effects of electric shock and electrocution.

12. (a) Draw the wiring layout for a workshop/Electrical Laboratory.

(OR)

(b) An irrigation pump set of 7.5 kW is to be installed at a distance of 20m from a 3-phase, 415V distribution line.

(i) List the materials required for the service main.

(ii) Draw the wiring diagram from distribution pole to the motor pump set.

13. (a) A 400 V, 3- ϕ , 2 no's induction motors are to be installed in a workshop as shown in Figure. Prepare a schedule with quantity of material. Assume missing data, if any.

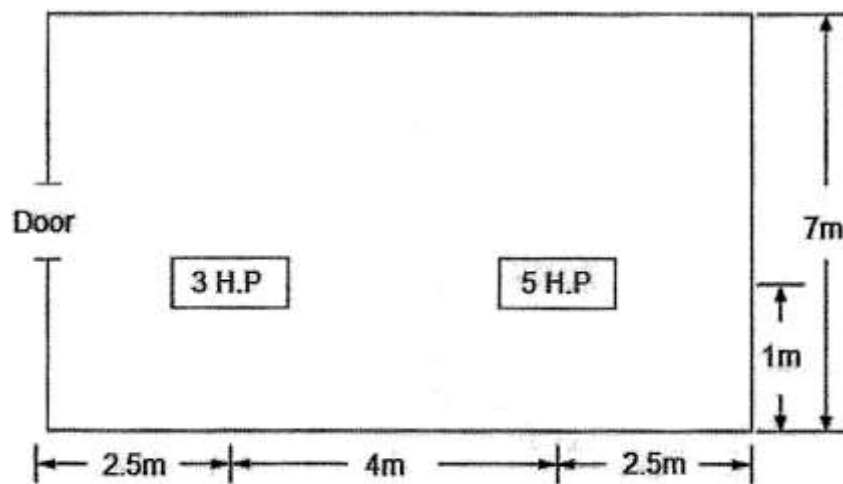


Fig.

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* (OR)

- (b) Estimate the quantity of materials required to make the surface type PVC conduit wiring for a building, the plan of which is shown in figure. Assume any missing data.

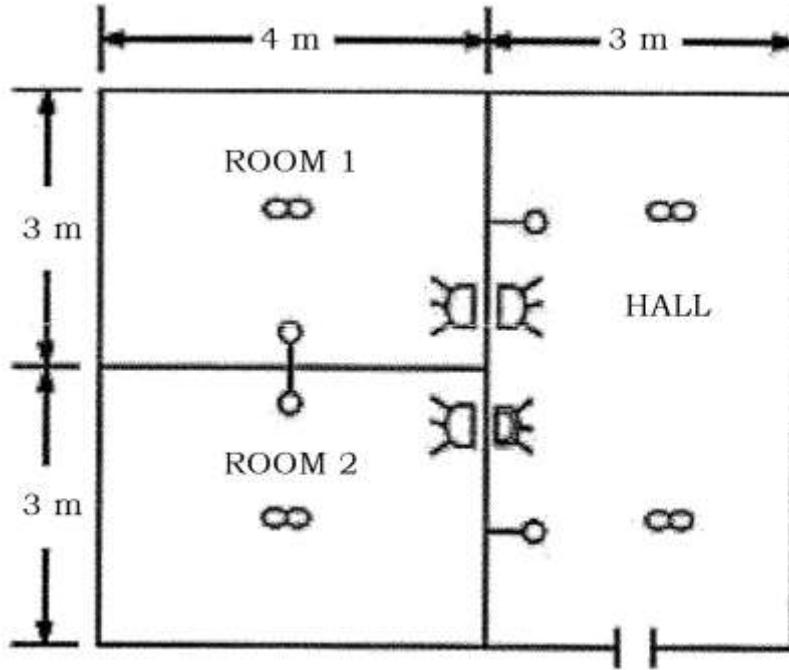


Fig.

14. (a) With a neat sketch estimate the quantity of all the electrical accessories and components required for the pole mounted transformer.

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(OR)

- (b) Estimate the quantity of materials required for a 11 kV overhead line for a length of 3.5 km with an assumption of 60 m span, with $7/2.59$ sq.mm ACSR conductor and 2 cut points in the line.

15. (a) Describe the departmental procedure steps to be followed to obtain domestic service connection.

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* (OR)

- (b) Calculate the regulation of a distribution line with 7/2-11 mm ACSR conductor which is emanating from distribution transformer, the load particulars with distance are shown in Figure.

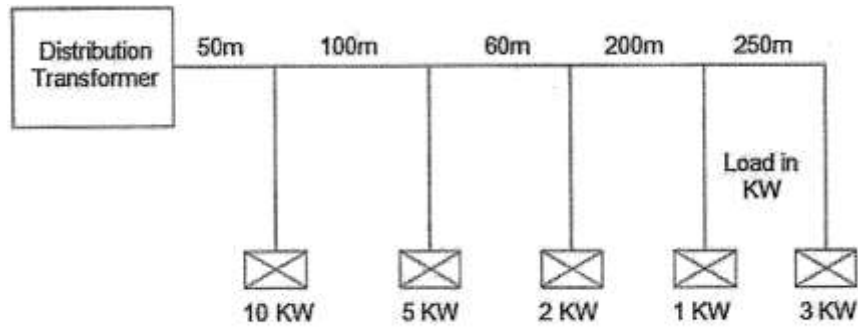


Fig. Load particulars of 11 KV line

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.

16. The plan of a newly constructed residential building is shown in Figure. It is to be provided with CTS system of wiring. Wattage of lamps = 60 W, Fan = 80 W, 15 A socket = 1000 W. Draw a neat wiring diagram.

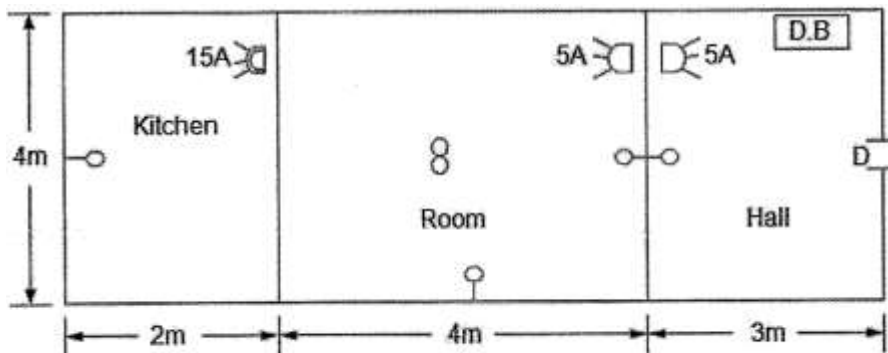


Fig. Plan of a residential building

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