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10EE81

Eighth Semester B.E. Degree Examination, June/July 2017
Electrical Design Estimation and Costing

Time: 3 hrs. Max. Marks:100

Note: 1. ***Answer FIVE full questions, selecting at least TWO questions from each part.***
2. ***Use of Wire table is permitted.***

PART – A

1 a. Write the necessity of estimating and costing. **(06 Marks)**

b. Explain the following:
(i) Comparitive statement (ii) Contigencies **(06 Marks)**

c. Write any four rules of Indian electricity. **(08 Marks)**

2 a. Write the general rules to be consider for wiring system. **(06 Marks)**

b. Fig. Q2 (b) shows the plan of residential building which has to be wire up with casing capping wiring system calculate the following:
(i) Show the wiring plan.
(ii) Propose load calculation.
(iii) Find the length of wire for wiring.
(iv) List the materials and find the total cost. **(14 Marks)**

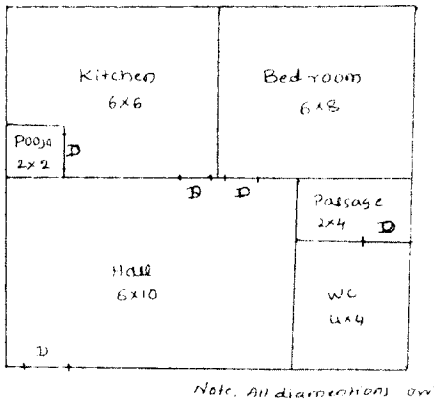

Fig. Q2 (b)

3 a. Differentiate residential and commercial electrification. **(06 Marks)**

b. Ground floor plan of school is shown in Fig. Q3 (b) which has same plan for floor 1 and 2. Rig up with conduit wiring system and calculate
(i) Draw the wiring layout for lighting system using 3φ supply.
(ii) Propose lighting load.
(iii) Material required for the wiring system. **(14 Marks)**

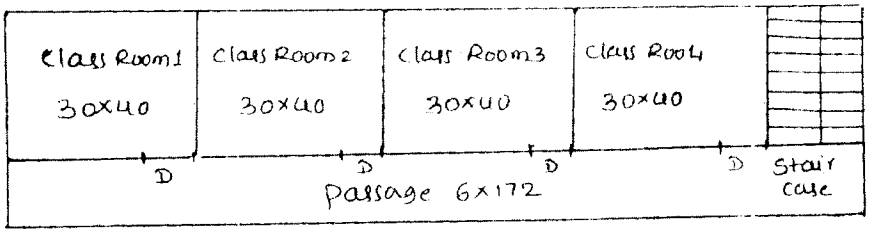

Fig. Q3 (b)

4 a. What are the different types of service connection, list advantages and disadvantages? **(06 Marks)**

b. What are the reasons for excess reading of energy consumption by energy meter? **(06 Marks)**

c. Prepare material required for overhead service, connection to home of 2 kW load at 240 V, 50 Hz supply. The supply is to be given from 20 meter away from the home. Assume diversity factor as 1.66 and future load as 100%. **(08 Marks)**

PART – B

5 a. Write the important consideration regarding motor installation wiring. **(08 Marks)**

b. A 15 HP, 415 V, 3 phase, 50 Hz induction motor is to be installed in a workshop. The plan of which is shown in Fig. Q5 (b). Draw layout of the wiring and estimate quantity of material required. Assume efficiency of motor as 85% and power factor as 0.8. **(12 Marks)**

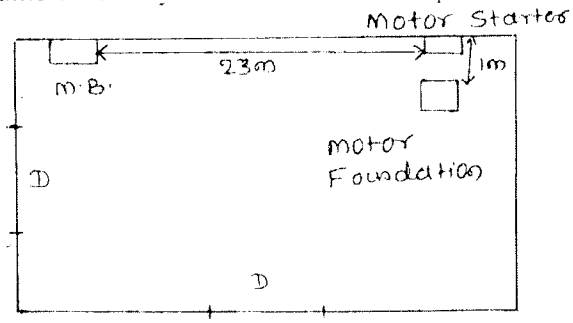

Fig. Q5 (b)

6 a. Write the main components of overhead lines. **(08 Marks)**

b. A pole for an over head 11 KV, 3 ϕ, 50 Hz line is required to be earthed and stay is to be provided make a neat sketch how it should be done. Prepare list of materials required. **(12 Marks)**

7 a. Explain testing and commissioning of over head distribution line. **(08 Marks)**

b. An overhead 3ϕ, 415 V distributor is to be laid along a straight route 300 m long. The end supports are terminal poles with 50 m span in between. Prepare list of material for laying distributor. The following data may used:

Conductor : ACSR $\frac{6}{1} \times 2.11$ mm for phase, nutral and street light.

Earth wire: GI wire, 8 SWG, 1 kg / 10 m weight.

L.T.cable : 4-core, 60 mm^2, 1100 V grade.

Distance of first terminal pole from the substation is 12 m. **(12 Marks)**

8 a. Write different types of substation. **(06 Marks)**

b. Write the material required for 33/11 KV outdoor substation and draw key diagram with one input and 6 output lines. **(14 Marks)**

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