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Fifth Semester B.E. Degree Examination, June/July 2023 Electrical Estimation and Costing

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

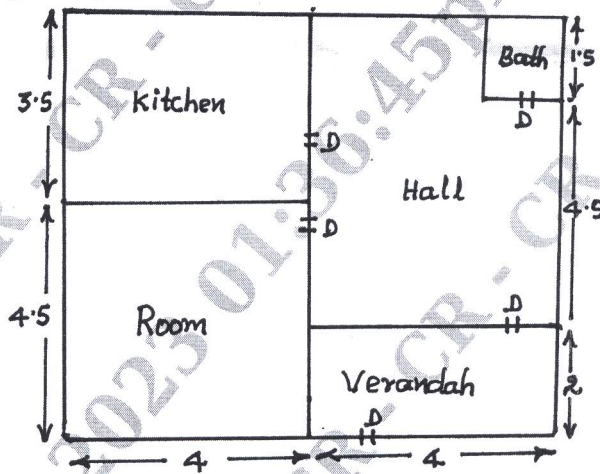
- 1 a. Define estimating and explain the purpose of estimating and costing. (06 Marks)
- b. Explain the following : (08 Marks)
 - i) Overhead charges
 - ii) Catalogues
 - iii) Electrical schedule
 - iv) Profit.
- c. Explain IE Rules 29, 30 and 50. (06 Marks)

OR

- 2 a. Explain the activities of purchase department. (06 Marks)
- b. Define tender. Explain modes of tendering. (08 Marks)
- c. Explain the IE rules 55, 77 and 79. (06 Marks)

Module-2

- 3 a. List any six general rules for residential installation. (06 Marks)
- b. The Fig Q3(b) show the plan of low income group government quarter. Draw the single line diagram for lighting and heating circuits on the sketch. Calculate total load, length and size of the wire by taking safety factor equals to two. Also estimate total cost.



Note: All dimensions are in metres

Fig Q3(b)

(14 Marks)

OR

- 4 a. Explain the different types of wiring. (06 Marks)
- b. One hall is to be provided with PVC casting and capping wiring for the following provisions: size of hall is 60m × 30m
 - Power point, 10Nos, 1000w each
 - Light points, 30 Nos, 60w each
 - Fan points, 15 Nos, 80w each
 - Plug points, 20Nos, 100w each
 Supply is 3-phase, 415V, 4-wire, 50Hz. Determine the total number of sub-circuits and prepare the list of materials along with the approximate cost. (14 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

Module-3

- 5 a. What do you understand by 'Service Line'? What are the types of service connections that are in use? Compare the different types of service connection. (08 Marks)
- b. List any six important considerations regarding motor installation wiring. (06 Marks)
- c. Find the material required for 1- ϕ overhead service line of a house located 12m away from pole, with following loads : lighting : 500w and Heating : 2000w. Assuming safety factor = 2. (06 Marks)

OR

- 6 a. Explain the determination of input power, main switch size of conductor and starter. (08 Marks)
- b. A 20Hp(metric) and 10 Hp(metric) induction motors are to be installed in a workshop, the plan of which is shown in Fig Q6(b). Draw the layout diagram and approximate cost of materials required. Assume efficiency of motor = 85% and pF 0.8 lag. (12 Marks)

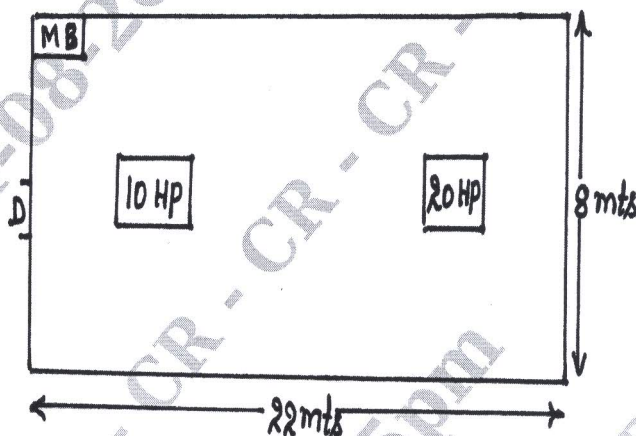


Fig Q6(b)

(12 Marks)

Module-4

- 7 a. Draw and explain typical 'Earthing of Transmission Line Supports'. (06 Marks)
- b. List the various points to be considered at the time of erection of overhead lines. (08 Marks)
- c. Estimate the quantity of materials required for adding 132kV bay at 132kV grid substation. (06 Marks)

OR

- 8 a. Explain the following : i) Guys and Stays ii) Anti climbing devices iii) lighting arresters iv) Span lengths (08 Marks)
- b. Estimate the quantity of material required and cost of 1km of overhead 11kV, 50Hz line using steel poles of 11 meter and ACSR conductor of 6/1 \times 2.59mm with an average span of 120m. (12 Marks)

Module-5

- 9 a. Explain briefly the various factors considered for selection of the site for substation. (10 Marks)
- b. Prepare a list of material required and work out the cost of installation of a 400KVA indoor type, 11/0.433kV transformer. (10 Marks)

OR

- 10 a. Write a short note on substation auxiliaries supply. (06 Marks)
- b. Estimate the quantity of material and cost of installation of 10MVA, 33/11kV substation. Also draw the key diagram. (14 Marks)

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