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10EE81

Eighth Semester B.E. Degree Examination, Jan./Feb.2021
Electrical Design, Estimation and Costing

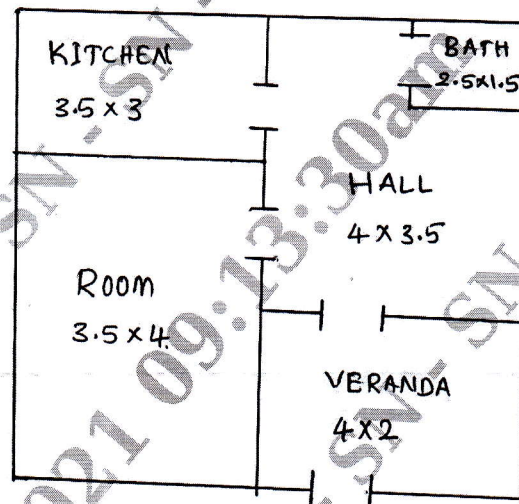
Time: 3 hrs.

Max. Marks:100

Note: Answer any FIVE full questions, selecting at least TWO questions from each part.

PART – A

1. a. What is Estimating? What are the importance of estimating and costing. (06 Marks)
 b. Mention the different modes of tendering and explain. (06 Marks)
 Explain any four Indian Electricity Rules. (08 Marks)
2. a. Explain general rules to be followed for residential wiring. (06 Marks)
 b. Fig. Q2 (b) shows plan of domestic house, which is to be wired in open conduit system for providing lighting outlets. (i) List lighting load, (ii) Draw the wiring plan (iii) Find length of wire (iv) Prepare estimation of cost.



(All dimensions in mm)

Fig. Q2 (b)

(14 Marks)

3. a. Differentiate between Residential and commercial installation. (06 Marks)
 b. A factory hall measuring 36 m x 20 m is to be illuminated so as to provide illumination of 35 lumen per square metre at working plane. Assume suitable space ratio, mounting height, utilization factor and depreciation factor. Calculate number of incandescent lamps wattage of each lamp and show the arrangement of lamp proposed. Draw the layout of wiring and estimate cost of wiring. (14 Marks)
4. a. Explain the method of installation of overhead service connection. (06 Marks)
 b. Explain the reasons for excess reading of energy consumption of energy meter. (06 Marks)
 c. Calculate and list the materials required for underground service connection to feed the power supply to an AEH installation having a lighting load of 4020 W and power load of 3 kW for a distance of 10 meters. (08 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.

PART - B

- 5 a. Write the important considerations regarding motor installation wiring. (06 Marks)
 b. A 10 H.P., 415 V, 3- ϕ , 50 Hz Induction motor is installed in a workshop. The plan of which is shown in Fig. Q5 (b). Make necessary assumptions:
 (i) Show the layout of wiring.
 (ii) Estimate quantity of material required and its approximate cost.

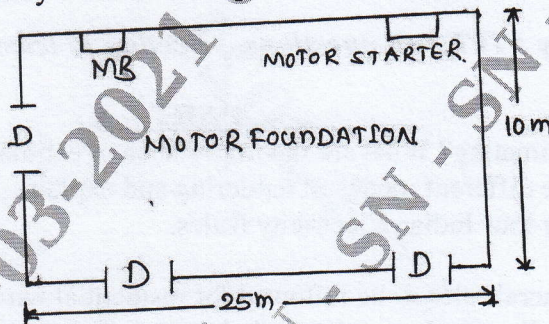


Fig. Q5(b)

(14 Marks)

- 6 a. Explain the main components of overhead lines. (08 Marks)
 b. A pole for an overhead 11 kV, 3-phase, 50 Hz line is required to be earthed and stay is to be provided. Prepare list of materials required and estimate the cost. (12 Marks)
- 7 a. Explain the points to be considered at the time of erection of overhead lines. (08 Marks)
 b. Estimate the quantity of material required and cost of 1 km of overhead 11 kV, 50 Hz line using steel poles of 11 metre height and ACSR conductor of $\frac{6}{1} \times 2.59$ mm with an average span of 120 m. (12 Marks)
- 8 a. Explain in detail classification of substation. (08 Marks)
 b. Estimate the quantity of material and cost for erection of 250 kVA pole mounted substation. (12 Marks)
