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10EE81

Eighth Semester B.E. Degree Examination, July/August 2022
Electrical Design Estimating 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 and what are the importance of the estimating and costing? **(04 Marks)**

b. Explain the following terms:
(i) Contingencies (ii) Overhead charges.
(iii) Specification. (iv) Standardisation. **(12 Marks)**

c. Briefly explain the process of inviting tenders. **(04 Marks)**

2 a. What are the general rules to be followed for internal wiring? **(06 Marks)**

b. Estimate the quantity of materials required and cost of the materials (assume appropriate cost) for wiring a residential building. Assume details of load. All dimensions are in meters. **(14 Marks)**

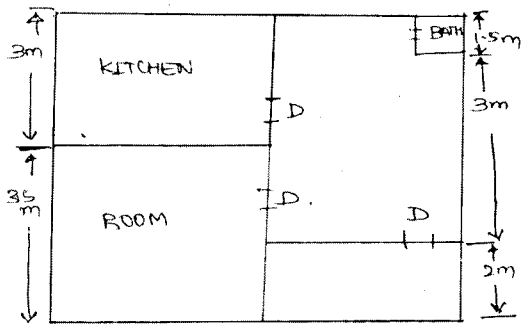

Fig. Q2 (b)

3 a. List and explain the design consideration of electrical installation in commercial building. **(06 Marks)**

b. The layout of workshop is as shown (Fig. Q3 (b)) in the following machines have to be commissioned in a work shop of inner dimensions (10 m × 5 m).
(i) 1 HP machine (Drilling) – 440 V, 1 HP
(ii) 2 Lathe 2 HP – 440 V, 2 HP each.
(iii) 1 Grinding Machine - 3ϕ, 440 V, 1 HP
(iv) 1 milling machine, 440 V, 1 HP
Estimate and propose the type of wiring.

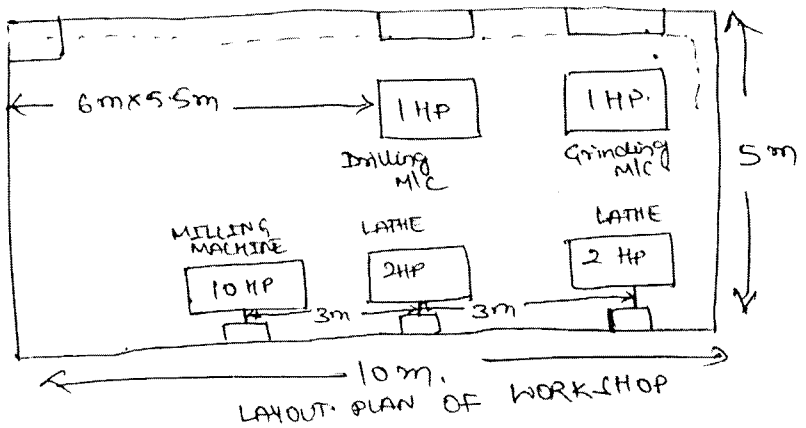

Fig. Q3 (b) **(14 Marks)**

4 a. What is a service connection? What are the merits and demerits of overhead service connection? **(06 Marks)**

b. List the materials required for under ground service connection. **(04 Marks)**

c. Enlist the reasons for excess recording of energy consumption by the energy meter. An energy meter DISC takes 6 minutes. In completing 30 revolutions when a load of 200 watts is switched on. The calibration factor of meter is 1200 revolution per k.w.h. Determine the percentage error in the meter. **(10 Marks)**

PART – B

5 a. List any four code of practice related to power installation. **(04 Marks)**

b. List the materials used in power installation with their specification. **(06 Marks)**

c. A 10 HP, 415 V, 3ϕ, 50 Hz squirrel cage induction motor is to be installed in a flour mill, the plan of which is shown in figure Fig. Q5 (c) below. Show the wiring diagram of the layout and estimate the quantity of materials required. Also list the suitable assumptions made.

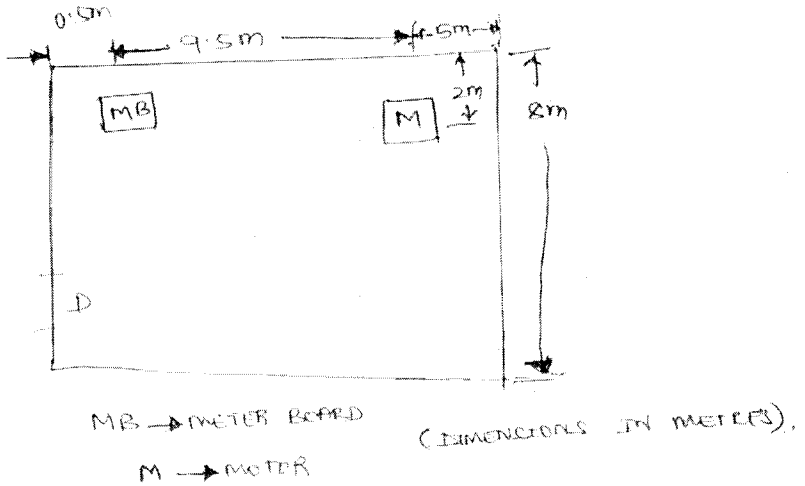

Fig. Q5 (c) **(10 Marks)**

6 a. What are the main requirements of line supports? Describe the factors governing height of pole. **(10 Marks)**

b. Estimate the quantity of materials required for adding 132 K.V. Bay at 132 K.V. Grid substation. **(10 Marks)**

7 a. Write note on conductor erection. **(08 Marks)**

b. Explain in detail about the main component of overhead lines. **(12 Marks)**

8 a. Write short notes on:

(i) Substation earthing

(ii) Indoor and Outdoor substation. **(10 Marks)**

b. Write the graphical symbols for various types of apparatus and circuit elements on substation main connection diagram. **(04 Marks)**

c. Write in detail specification of equipments and switch gear used in substation. **(06 Marks)**

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