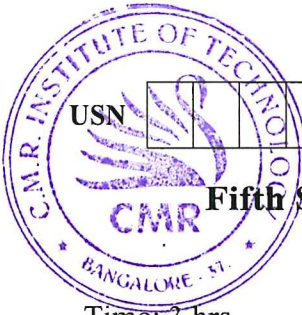


CBCS SCHEME

17EE553



Fifth Semester B.E. Degree Examination, July/August 2022 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

- What is the meaning of estimating? Explain the purpose of estimating and costing. (06 Marks)
 - Explain purchase system. (08 Marks)
 - What is tender form? Explain various modes of tendering. (06 Marks)

OR

- State the purpose of IE rule and regulations. Explain IE rule 46 and 79. (08 Marks)
 - Explain: (i) Catalogues (ii) Overhead charges (iii) Profit (06 Marks)
 - Write short note on the comparative statement. (06 Marks)

Module-2

- Explain the factors to be considered for choice of internal wiring system of residential buildings. (08 Marks)
 - What are the different types of fuses used for protection of residential installations? Explain. (06 Marks)
 - List the general rules to be followed for internal wiring. (06 Marks)

OR

- With neat diagrams, explain the various systems of distribution of electrical energy within buildings. (08 Marks)
 - Draw the electrical circuit and estimate the quantity of materials required for P.V.C casting-capping used in a house, the plan of which is shown in Fig.Q4(b). Assume the height of ceiling as 3.6 meters and one plug point (60 W) is to be provided in each room. (06 Marks)

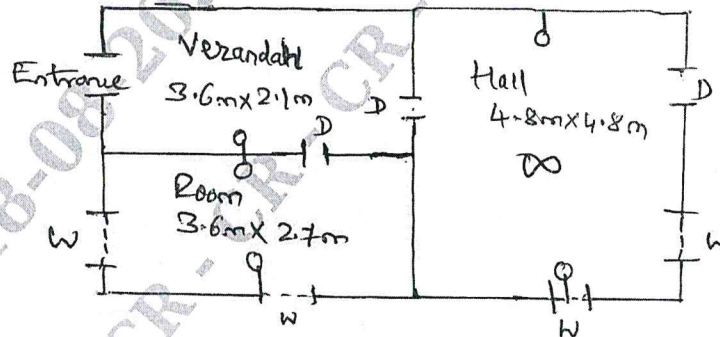


Fig.Q4(b) Plan of a house

(12 Marks)

Module-3

- State the important considerations regarding motor installation wiring. (04 Marks)
 - Explain with neat sketches, any two methods of installation of overhead service lines based on the prevailing conditions of the building. (06 Marks)

- c. Prepare an estimation of materials required for providing overhead service connection to a single storied building with 240 V, 1 ϕ , 50 Hz AC supply. The building has a light and fan load of 5 KW. The supply is to be given from an overhead line 20 m away from the building. Assume diversity factor as 1.66 and future expansion of the load as 100%.

(10 Marks)

OR

- 6 a. Explain the procedure to determine:
 (i) Input power (ii) Main switch rating (iii) Type of starter
 (iv) Size of cable (v) Rating of fuse with respect to motor installation wiring (10 Marks)
- b. A 15 HP, 415 V, 3 ϕ , 50 Hz induction motor is to be installed in a workshop, the plan of which is shown in Fig.Q6(b). Draw the layout of the wiring and estimate the materials required. The wiring is to be surface conduit. Assume motor efficiency as 85% and power factor as 0.8 lagging.

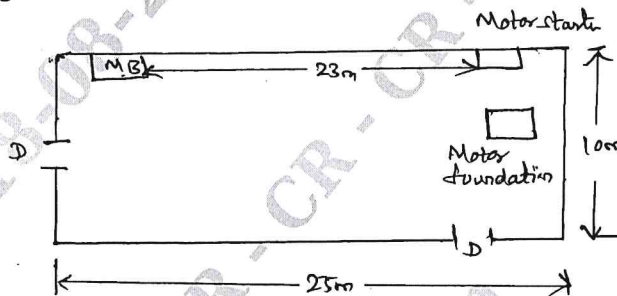


Fig.Q6(b) Plan of workshop

(10 Marks)

Module-4

- 7 a. With neat diagram, explain different types of cross arms. (06 Marks)
 b. Explain the necessity of earthing of transmission line supports and also show with a neat sketch how earthing of a line support is done using pipe earthing. (06 Marks)
 c. Estimate the quantity of material required for 1 km of overhead 11 KV, 50 Hz line using steel poles of 11 mtr height and ACSR conductor of $\frac{6}{1} \times 2.59$ mm with an average span of 120 m. (08 Marks)

OR

- 8 a. List out the various points to be considered at the time of erection of overhead lines. (06 Marks)
 b. A pole for an overhead 11 KV, 3 ϕ , 50 Hz line is to be earthed and a stay is to be provided. Prepare a list of materials required. (08 Marks)
 c. Explain the functions of the following in relevance to overhead transmission and distribution: (i) Lighting arresters (ii) Bird guards (iii) Phase plates (06 Marks)

Module-5

- 9 a. Describe briefly the equipments that must be available in a substation. (10 Marks)
 b. Prepare a list of material required for the installation of 400 kVA indoor type 11/0.433 KV transformer. (10 Marks)

OR

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- 10 a. Explain the purpose of substation earthing system. (06 Marks)
 b. Draw the single line diagram for a 100 MVA, 33/11 KV sub-station and prepare an estimation of materials required, with their specification. (10 Marks)
 c. Briefly explain erection of conductor for transmission line. (04 Marks)
