CBCS SCHEME

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17EE553

Fifth Semester B.E. Degree Examination, Dec.2019/Jan.2020
Electrical Estimation and Costing

Time: 3 hrs. Max. Marks: 100

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

Module-1

1 a. Define estimating and state its purpose. State the important facts which an estimator should know for preparing an internal wiring estimate. **(08 Marks)**

b. Explain the following : (i) Catalogues (ii) Purchase system (iii) Contingencies. **(06 Marks)**

c. Mention the different mode of tendering and explain them. **(06 Marks)**

OR

2 a. State the purpose of IE rule and regulations. Explain IE rules 29,30 and 55. **(08 Marks)**

b. Write note on the comparative statement. **(06 Marks)**

c. Explain (i) Overhead charges (ii) Profit (iii) Payment of bills. **(06 Marks)**

Module-2

3 a. List the general rules guidelines for residential installation. **(04 Marks)**

b. Explain the different systems of distribution of energy in a building. **(04 Marks)**

c. Draw the electrical circuit and estimate the quantity of material required for the wiring system. Chosen in a house plan shown in Fig. Q3 (c). The hight of ceiling as 3.6 m and one plug point (60 W) has to be provided in each room. **(12 Marks)**

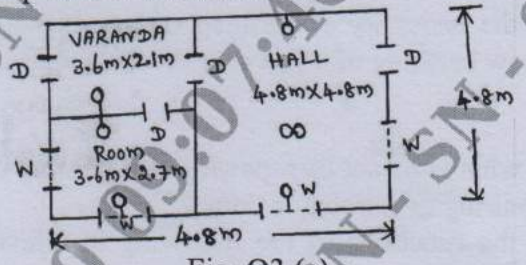

Fig. Q3 (c)

OR

4 a. Explain the points on which the choice of wiring system can be made. Why fuse is connected in the phase wire? **(08 Marks)**

b. With reference to internal electrification of building, explain how to determine the following: (i) Total load (ii) Rating of main switch and distribution board (iii) Number of circuits. **(06 Marks)**

c. Determine the size of conductor (copper) for a 2-core cable required to carry a maximum current of 60 A. Length of the cable used is 60 m and declared supply voltage is 240 V AC. (Current ratings of cables shown in table Q4 (c) may be referred) **(06 Marks)**

Size of cable		Current rating in Amps		Approximate Ampere-meter per volt drop
No. and dia of wire	Area in mm^2	2 Core cable	3 or 4 core cable	
19 / 1.12	19.35	62	50	1050
19 / 1.32	25.80	74	59	1475
19 / 1.626	38.70	97	78	2200

Table Q4 (c)

Module-3

5 a. State the important considerations regarding motor installation wiring. **(06 Marks)**

b. Explain the determination of input power, size of conduit, distribution board, main switch, starter size of the cable and rating of the fuse. **(08 Marks)**

c. Prepare an estimation of materials for providing OH service connection to a single storied building with 240 V, 1ϕ, 50 Hz AC supply. The building has a light and fan load of 5 kW. The supply is to be given from an OH line 20 m away from the building. (assume missing data). **(06 Marks)**

OR

6 a. What do you understand by service line? Write down the various methods of installing service lines. **(04 Marks)**

b. With simple sketches, explain any two methods of installation of OH service lines based on the prevailing conditions of the building. **(06 Marks)**

c. A 10 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 (c). Show the single line diagram and estimate the quantity of material required. **(10 Marks)**

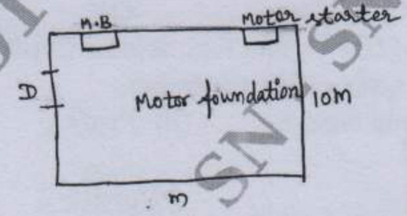

Fig. Q6 (c)

Module-4

7 a. List out the various points to be considered at the time of erection of over head lines. **(06 Marks)**

b. Explain the following : (i) Cross arms (ii) Guys and stays (iii) Lightning arrestor. **(06 Marks)**

c. 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. **(08 Marks)**

OR

8 a. Explain what is meant by repairing and jointing of overhead ACSR transmission conductors. How repairing or jointing is done? **(06 Marks)**

b. Explain the functions of the following in relevance to OH transmission and distribution : (i) Phase plates (ii) Beads of jumpers. **(06 Marks)**

c. A pole for an overhead 11 KV, 3ϕ, 50 Hz line is required to be earthed and a stay is to be provided make a neat sketch, how it should be done. Prepare a list of materials required. **(08 Marks)**

Module-5

9 a. Describe briefly the equipment that must be available in a substation. **(05 Marks)**

b. Write short notes on substation auxiliary supply. **(05 Marks)**

c. Prepare a list of material required for the installation of a 400 KVA indoor type 11/0.433 KV transformer. **(10 Marks)**

OR

10 a. Explain the functions of the following in a substation : (i) Isolators (ii) Earthing switch (iii) Batteries. **(06 Marks)**

b. Draw the single line diagram for 132/33 KV substation with main and transfer bus having 2×40 MVA transformers. Prepare on estimation of materials required, with their complete specification. **(08 Marks)**

c. Explain the purposes of substation earthing system. **(06 Marks)**

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