CBCS SCHEME

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17EE553

Fifth Semester B.E. Degree Examination, Dec.2023/Jan.2024
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. Explain the following :
i) Payment of bills
ii) Contingencies
iii) Purchase order
iv) Overhead charges
v) Comparative statement. **(10 Marks)**

b. Explain purchase system. **(10 Marks)**

OR

2 a. What is tender form? Explain various modes of tendering. **(10 Marks)**

b. State the purpose of IE rule and regulations. Explain IE rules 29, 30 and 55. **(10 Marks)**

Module-2

3 a. Write and explain the general rules for internal wiring system. **(10 Marks)**

b. Write a note on :
i) Main switch
ii) Fuse
iii) Size of fuse
iv) Earthing
v) Multi-strand cables. **(10 Marks)**

OR

4 a. Determine the size of the copper conductor for a 2 core cable required to carry a maximum current of 60A, length of cable used is 100 meters and declared supply voltage is 240V AC. [Current ratings of cables shown in Table Q4(a) may be referred].

Size of cable		Current rating in Amperes		Approx Ampere meter/voltage 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(b) **(10 Marks)**

b. A residential building is to be provided with electrical installation to be connected to a single phase, 240V, 50Hz AC supply. Details of the electrical points to be installed in the building are as follows : Lighting circuit : light points – 8 nos, 5A socket outlets – 7 nos.
Heating circuit : 15A sockets outlets – 2 nos. (1 for Kit, 1 for bath room).

Determine :
i) Total number of sub – circuits
ii) Rating of distribution board
iii) Size of cable for lighting circuits
iv) Size of cable for heating circuits. **(10 Marks)**

Module-3

5 a. What are service lines? Mention the different types. **(06 Marks)**

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

c. With simple sketches, explain any two methods of installation of overhead service lies based on the prevailing conditions of the building. **(08 Marks)**

OR

6 a. Prepare an estimation of materials for providing OH service connection to a single storied building with 240V, 1ϕ, 50Hz AC supply. The building has a right and Fan load of 5KW. The supply is to be given from an overhead line 20m away from the building. [Assume missing Data]. **(10 Marks)**

b. Explain how to determine the following for the purpose of wiring :

i) Input power to a motor
ii) Input current to motors
iii) Size of the cable
iv) Rating of the fuse. **(10 Marks)**

Module-4

7 a. What are the function of :

i) Cross Arms
ii) Guys and Stays
iii) Lighting Arrestors
iv) Danger plates
v) Anti climbing devices. **(10 Marks)**

b. What are the points to be considered at the time of erection of overhead lines? **(10 Marks)**

OR

8 a. A pole for an overhead 11KV, 3 – phase, 50Hz line is required to be earthed and stay is to be provided, make a neat sketch how it should be done. Prepare list of materials required. **(10 Marks)**

b. An overhead distribution line of 415V, 3-phase, 50Hz is to be erected along a straight route. The length of the line is 300 meters and the end supports are terminal structures. The span between adjacent pole is 50 meters. Consider 4 SWG bare copper wires for phase, neutral and street light control; 8 SWG galvanized steel wire for earth wire. Find the :

i) Number of intermediate poles and the number terminal structures
ii) Length of wire of each size for the line. **(10 Marks)**

Module-5

9 a. Draw the single line diagram for a 10MVA, 33/11KV substation and prepare an estimation of materials required, with their compete specification. **(10 Marks)**

b. Explain the functions of the following in a substation :

i) Lighting arrestors
ii) Isolators
iii) Earthing switch
iv) Batteries. **(10 Marks)**

OR

10 a. Explain the requirement of the following in a substation :

i) Substation auxiliaries supply
ii) Substation earthing. **(10 Marks)**

b. Draw the single line diagram for 132/33KV substation with main and transfer bus having 2 × 40MVA transformers. Prepare on estimation of materials required, with their complete specification. **(10 Marks)**

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