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10EE81

Eighth Semester B.E. Degree Examination, Dec.2019/Jan.2020
Electrical Design, Estimating and Costing

Time: 3 hrs.

Max. Marks:100

Note: 1. Answer any FIVE full questions, selecting atleast TWO questions from each part.
2. Use of conductor tables is permitted.

PART - A

- 1 a. Write the necessity of estimating and costing. (06 Marks)
- b. Explain the following terms : (06 Marks)
- (i) Overhead charges (ii) Contingencies (iii) Profit
- c. Explain the activities of purchase department. (08 Marks)

- 2 a. What are the general rules to be followed for internal wiring? (06 Marks)
- b. The Fig.Q2(b) shows the plan of a LIG Govt. quarter. Draw the single line diagram for lighting and heating circuits on the sketch. Calculate total load; length and size of the wire by taking safety factor equals to two (14 Marks)

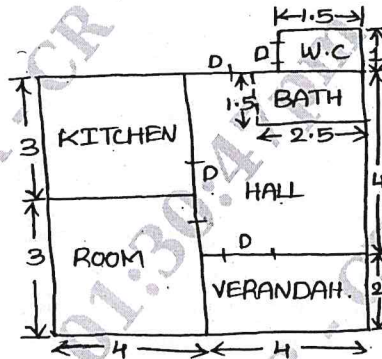


Fig.Q2(b)

- 3 a. Explain the determination of load calculation, selection of size of service connection and nature of supply. (06 Marks)
- b. Fig.Q3(b) shows the plan of ground floor of school building school building consists at ground floor, first floor and second floor having same plan that if ground floor. Draw single line diagram for ground floor and calculate material required for three floors. (14 Marks)

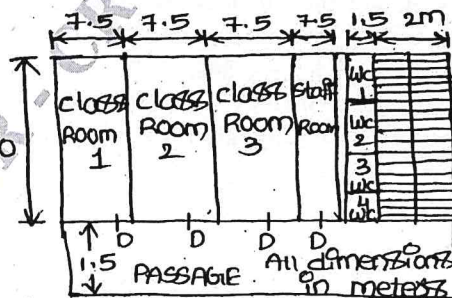


Fig.Q3(b)

12/4 JAN 2020

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.

- 4 a. Explain points to be checked while carrying out inspection of wiring installation. (06 Marks)
 b. Mention the different types of tests conducted on wiring installation. Explain in detail testing of Earth Continuity path. (06 Marks)
 c. Find the materials required for 1 ϕ overhead service line of a house located 12 meters away from pole, with following loads :
 Lighting = 500 watts ; Heating = 2500 watts. Assume Safety factor = 2. (08 Marks)

PART – B

- 5 a. List any eight important considerations regarding motor installation wiring. (08 Marks)
 b. Two ac, 3 phase, 415V, 50 Hz induction motor is to be installed in a workshop, the plan of which is shown in Fig.Q5(b). Show the layout of the wiring (key diagram) and calculate the quantity of material required. Assume efficiency of motor = 85% and power factor 0.9 lagging. (12 Marks)

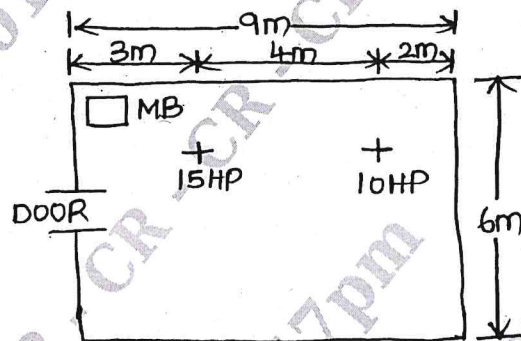


Fig.Q5(b)

- 6 a. List the points to be considered at the time of erection of overhead lines. (06 Marks)
 b. Estimate the quantity of material required for running 120 km, single circuit of 66 kV transmission line using four legged fabricated steel structures. The conductor used no.2 ACSR. Assume a span of 300 mts and every 10th tower there is an Anchor tower. (14 Marks)
- 7 a. Explain in brief testing and commissioning of overhead distribution lines. (06 Marks)
 b. An overhead 11 kV, 50 Hz line has to be erected using 27 kg, 10 metre long steel poles and copper wire of size no. 3/2.642 mm, with average span of 150 metres. Make a list of material required. (14 Marks)
- 8 a. Explain with neat sketch Pole mounted substation. (08 Marks)
 b. Draw a estimate the quantity of material required for installation of 10 MVA, 33/11kV substation with following details.
 (i) Input line – 33 kV – 2 nos.
 (ii) Transformers 33/11 kV – 2 nos – of 5 MVA
 (iii) 4 Nos. of 11 kV outgoing lines 2 on each transformer. (12 Marks)

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