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10EE81

**Eighth Semester B.E. Degree Examination, June/July 2018**  
**Electrical Design, Estimation 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. Explain Indian Electricity rule 29, 30, 50, 55, 77 and 79. (06 Marks)
- b. Explain the following : (08 Marks)
  - i) Electrical schedule
  - ii) Contingencies
  - iii) Overhead charges
  - iv) Catalogues. (06 Marks)
- c. List out guidelines for inviting tender. (06 Marks)
- 2 a. Explain the sequence to be followed for preparing the estimate of residential wiring. (06 Marks)
- b. Estimate the quantity of materials required for wiring a newly constructed building where the plan is shown in a Fig Q2(b). Assume the details of load. All dimensions are in meters.

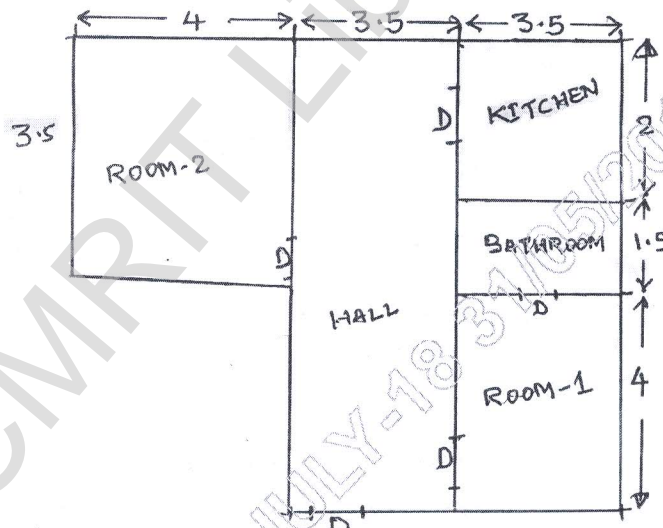


Fig Q2(b)

(14 Marks)

- 3 a. What is bus bar? Draw the diagram showing the arrangement of bus bar and switch fuse unit in a bus bar chamber. (05 Marks)
- b. An office hall  $25\text{m} \times 15\text{m} \times 3\text{m}$  is to be illuminated by 40 nos twin 40 watts tube light fitting and 20 nos of fan of 60 watts along with 10 points of single phase 230V, 50Hz supply. Assume PVC conduit wiring calculate:
  - i) Total connected load
  - ii) Number of sub circuit
  - iii) Size of cable
  - iv) Rating of switch board and DB. Distribution board
  - v) Also show the wiring of 1 sub circuit. (15 Marks)

1 of 2

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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. Write a short notes on service lines. (06 Marks)  
 b. Write the reasons for excess recording of energy consumption by energy meter. (06 Marks)  
 c. Find the materials for single phase overhead service lines of house located 10 meter away from pole with following :

Load lighting = 300W  
 Heating = 2500W  
 Assume safety factor = 2 (08 Marks)

**PART - B**

- 5 a. List important consideration regarding power installation. (05 Marks)  
 b. Explain the determination of input power, size of conductor, distribution board, main switch and starter. (05 Marks)  
 c. A 10 HP 415, 3 $\phi$ , 50Hz induction motor is to be installed in a workshop the plan of which is shown in Fig Q5(c) show the single line diagram and estimate the quantity of materials required.

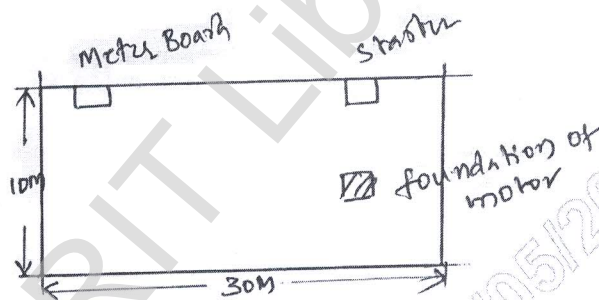


Fig Q5(c)

(10 Marks)

- 6 a. What are the main requirement of the line support? Describe factors governing height of pole? (08 Marks)  
 b. Estimate the cost of adding 132kV bay at 132 kV grid substations. (12 Marks)
- 7 a. List the points to be considered at the time of erection of overhead lines? (08 Marks)  
 b. A pole for an overhead 11kV 3 $\phi$ , 50Hz line is required to be earthed and a stag is to be provided. Make a neat sketch how it should be done. Prepare a list of materials required. (12 Marks)
- 8 a. Describe briefly the equipments that must be available in a substation. (08 Marks)  
 b. Estimate the quantity of material required for the augmentation of 33kV grid substation of 500KVA to 1000 KVA 33/11 KV grid substation. (12 Marks)