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10EE81

**Eighth Semester B.E. Degree Examination, June/July 2019**  
**Electrical Design, Estimation and Costing**

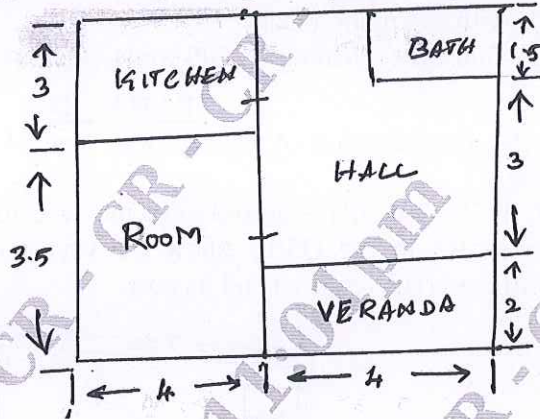
Time: 3 hrs.

Max. Marks:100

Note: Answer any FIVE full questions, selecting at least TWO questions from each part.

**PART - A**

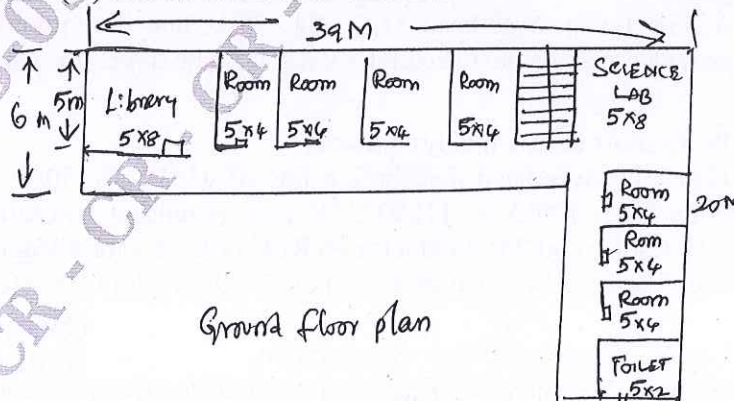
- 1 a. Write the necessity of estimation and costing. (06 Marks)
- b. Explain the following terms : (06 Marks)
  - (i) Contingencies (ii) Over head charges (iii) Profit.
- c. Briefly explain the modes of tendering. (08 Marks)
- 2 a. What are the general rules to be followed for domestic wiring? (06 Marks)
- b. The Fig Q2(b) show the plan of a low income group government quarter. Draw the single line diagram for lighting and heating circuits on the sketch. Calculate total load, length of conduit, length and size of the wire by taking safety factor equal to two. (14 Marks)



Note : All dimensions are in meters

Fig Q2(b)

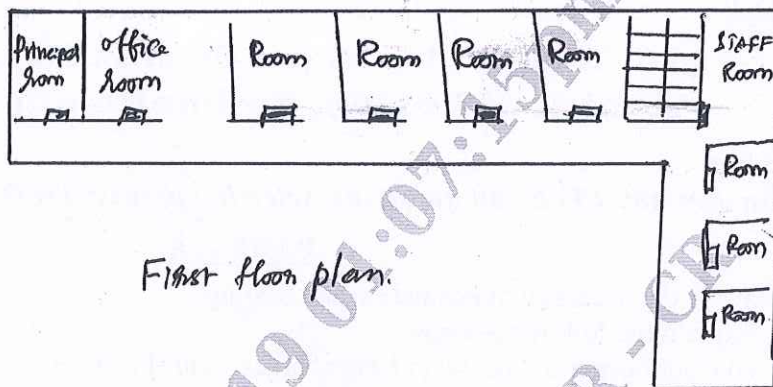
- 3 a. Write short note on Earthing of an Electrical installation and selection of earth electrode and Earth conductors. (06 Marks)
- b. The ground floor plan and the first floor plan of a newly constructed double storeyed school building are shown separately Fig Q3(b)-(i) and Q3(b)-(ii). Draw a schematic diagram showing the distribution of power to the various prints from the 3 phase 4 wire.
  - (i) No of sub-circuits (ii) Deciding the cable size (iii) Deciding the switch boards and distribution boards (iv) Busbar and busbar chamber



Ground floor plan

Fig Q3(b)-(i)

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.



Q3(b)-(ii)

(14 Marks)

- 4 a. List the merits and demerits of over head service main. (06 Marks)  
 b. Explain points to be checked while carrying out inspection of wiring installation. (06 Marks)  
 c. Find the material required for  $1\phi$  over head service line of a house located 10 mtrs away from pole with following loads  
 Lighting – 300watts, Heating – 2500 watts, Assume S.F = 2. (08 Marks)

**PART - B**

- 5 a. Explain the determination of input power, sine of conduit, distribution board main switch and starter. (08 Marks)  
 b. A 10HP, 415V,  $3\phi$ , 50Hz squirrel cage motor is to be installed in a flour mill, the plan of which is shown in Fig Q5(b), show the wiring diagram of the layout and estimate the quantity of materials required and its cost.

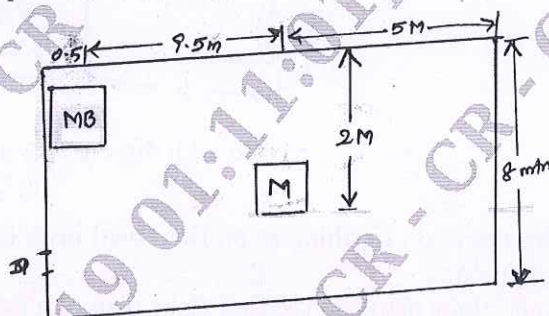


Fig Q5(b)

(12 Marks)

- 6 a. What are the main requirements of the line supports, Describe factors governing height of pole? (08 Marks)  
 b. A pole for an over head 11kV,  $3\phi$ , 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. (12 Marks)
- 7 a. Write short notes on Guys and stays. (08 Marks)  
 b. 1km long over head distribution line of 415V,  $3\phi$ , 50Hz is to be erected along a straight route from 100kVA, 11kV/433V pole mounting substation. The line is to be laid with  $6/1 \times 3.00$ mm ACSR conductor on RCC pole of 9 mtrs length. Estimate material required for line. The span between adjacent pole is 50mtrs draw a sketch of route. (12 Marks)
- 8 a. Explain the classification of substation. (08 Marks)  
 b. Estimate the quantity of material required for the augmentation of 33kV grid substation of 500kVA to 1000kVA, 33/11kV grid substation. (12 Marks)

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