

## EIGHTH SEMESTER B.TECH. DEGREE EXAMINATION JUNE, 2010

EE 04 801 ELECTRICAL SYSTEM DESIGN & ESTIMATION  
(2004 Admn)

Time: Three hours

Maximum: 100 marks

I (a) Write short notes on the following

- Inspection of service connection
- Inspection of substation installations
- Testing of wiring installation
- Testing of earth continuity path

(b) Write the material required for complete the GI pipe earthing

(c) List out the design considerations of good lighting

(d) An hospital hall 15m x 10m is illuminated by 40 W of CFL lamp of lumen output 5200 lumens. The average illumination required by that place is 300 lux. Calculate the number of lamps required to be filled in that hall. Assume coefficient of utilization is to be 0.7 and depreciation factor is 1.1

(e) Write the installation requirement of high rise building.

(f) Describe the necessary lay out apparatus between the MV panel, Lighting, and Power distribution board in the educational institution

(g) Explain how the ratings of cables and fuses are described for motor installations.

(h) A pole mounted 250 kVA, 11 kV / 415 V sub-station has to be installed for giving supply to a hospital. List out the material required for the installation

(8 x 5 = 40 marks)

II (a) Briefly explain the various protection and protective devices for electric installation against overload, short-circuit and earth fault.

Or

(b) A three phase HT line is to be installed from substation to pole mounted 500 kVA, 11 kV / 415 V Transformer .The distance is 2.5 km. Estimate the material required for that installation. Make the necessary layout.

III (a) With neat example explain the design of flood lighting and street lighting.

Or

(b) A Theatre 30 m x 60 m is illuminated by 25 W CFL lamp of 3000 lumens. The lamp is being mounted at a height of 5 m from the floor. The average illumination required is 120 lux. Calculate the number of lamps required. Assume coefficient of utilization is to be 0.9 and depreciation factor is 0.65. Also estimate the material required and its approximate cost. Show the layout diagram neatly.

IV (a) Draw the layout and schematic diagram for the electrical system required for the two 5 tone air-conditioning unit and for one lift of capacity 12 persons in the hotel. Estimate the rough cost and materials

Or

(b) Briefly explain the design considerations of electrical installation in commercial building.

V (a) Describe the Plate earthing and pipe earthing system with the neat diagram. Clearly indicate the requirements of both type of earthing with few examples.

Or

(b) With neat schematic diagram explain the operation of 630 kVA, 11 kV / 415 V indoor substation. List out the protective devices employed in that substation.

(4 x 15 = 60 marks)