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A – 2342

Reg. No. :

Name :

**Eighth Semester B.Tech. Degree Examination, April 2016
(2008 Scheme)**

08.803 : ELECTRICAL SYSTEM DESIGN (E)

Time : 3 Hours

Max. Marks : 100

Instruction: Answer **all** questions in Part **A** and **one** question from **each** Module in Part **B**.

PART – A

1. Explain the objective of National Electric Code.
2. Briefly explain the Indian Electricity Rules, 1956.
3. Mention the classification of voltages with their ranges.
4. Briefly explain the electrical services in buildings.
5. Mention the difference between MCCB and MCB.
6. Write the basic design consideration for the air conditioning systems.
7. Discuss the guide lines for the cable installations.
8. Discuss the factors to be considered for the selection of generator for high rise building.
9. Mention the different factors to be considered for the selection of 11 kV/433 V transformer.
10. Explain the factors to be considered for the selection of flood lighting source.



(10×4=40 Marks)

PART – B

Module – I

11. a) Draw the connection diagram for a simple electric call bell system. 4
- b) Write the basic design consideration for the air conditioning systems. 6
- c) Explain precommissioning tests of domestic installations. 10

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12. A domestic building has 2 bed rooms, kitchen, one bathroom, work area, sit out, dining cum drawing room and a stair room. Provide sufficient number of light and fan points, 5 A socket outlets, 16 A socket outlets and bedroom air conditioner, based on the provisions of national electric code. Suggest the type of supply, number of sub circuits and specifications of MS, DB, ELCB, MCBs and also draw the installation plan and schematic diagram. 20

Module - II

13. a) Draw and explain pipe earthing and mat earthing. 10
 b) Explain the necessities of lightning arresters. 5
 c) Draw the schematic diagram for the installation of 320 kVA backup generator of an industry. Mark all the protective and controlling devices. 5
14. An 11 kV overhead line is to be run through a distance of 3 km from an existing 11 kV overhead line. A substation 11 kV/415 V is to be erected at the terminal point of this overhead line in a densely populated area. The 11 kV/415 V transformer is to feed the following loads. Production shop has a load of 400 kW of 3 phase and single phase motors, foundry shop having a load of 150 kW and administration block having light and fan loads of 100 kW. Estimate the quantity of material required for the installation of the overhead line and select the type of substation with the specification of transformer. Also draw the schematic diagram for the substation. (Assume the pf to be 0.8 and load factor to be 0.6). 20

Module - III

15. a) Explain : 6
 i) Maintenance factor and ii) Utilization factor. 6
 b) What are the basic design considerations for street lightning ? 6
 c) A road of 500 m long is required to be illuminated by providing 150 W HPS lamps. The width of the road is 8 m. Design a street lighting scheme to obtain a minimum level of illumination of 10 lux. Assume mounting height of the pole is 9 m and arm length is 2 m. Take CU as 0.6, LLF as 0.7 and lumen output of the lamp as 16000. Sketch the arrangement of the street lighting poles. 8
16. Design an electrical system for an auditorium with a seating capacity of 800 people. Provide sufficient number of stage light, auditorium lights, air conditioning for the hall etc. Draw the entire schematic diagram for the installation including the backup provision. 20