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Reg. No. : .....

Name : .....

**Eighth Semester B.Tech. Degree Examination, November 2015  
(2008 Scheme)**

**08.803 : ELECTRICAL SYSTEM DESIGN (E)**

Time : 3 Hours

Max. Marks : 100

**PART – A**

Answer all questions :

1. How is NEC different from Indian Electricity Rule 1956 ?
2. Give the standard symbols for
  - a) Power Socket Outlet
  - b) Auto transformer
  - c) Current transformer
  - d) Exhaust fan
3. List the standard voltages used in electrical systems in India and why voltage tolerances are permitted in the supply system.
4. Explain the working of ELCB with figure.
5. Draw the single line diagram of the circuit for wiring a 10 H.P. induction motor. Give the specification of the control and protective devices.
6. With a neat figure explain pipe earthing for domestic installations.
7. How is industrial installations classified ?
8. What are the design considerations for a good lighting system ?
9. Explain with figures the scheme for protection of high rise buildings from lightning.
10. Briefly explain air conditioning loads and its specifications. **(10×4=40 Marks)**



P.T.O.

**PART – B**

Answer **one** question from **each** Module.

**Module – I**

11. Design the electrical layout and prepare the estimation for wiring a residential building with 4 bedrooms each of size  $4 \times 3$  m. 2 bathrooms of size  $1.8 \times 2$  m, a dining hall of  $5 \times 4$  m and kitchen  $3 \times 3$  m. Provide 2 numbers of 1.5 tonne air-conditioners and 4 numbers of power socket outlets. Assume missing data. **20**
12. A residential building having four bedrooms, three bathrooms, a kitchen, a drawing cum dining room, a work area and a sitout is to be provided with electrical wiring of concealed conduct type. Find out the number of circuits required. Draw the schematic diagram and list the materials required (with specification) for completing the wiring. **20**

**Module – II**

13. Two numbers 3 phase 400 V, 50 Hz squirrel cage induction motors of 15 H.D. and 10 H.P. ratings with star delta starters are to be installed in a workshop of size  $9 \text{ m} \times 6 \text{ m}$ . Draw a wiring scheme, indicating the number and size of cables used. Prepare a list of materials required, including necessary earthing with GI plates of  $600 \text{ mm} \times 600 \text{ mm} \times 6 \text{ mm}$  size. Estimate the cost of the scheme. **20**
14. In a village a residential load of 10 kw, agricultural load of 25 hp and industrial load of 25 h.p. has to be electrified. Select the type of substation to be erected. Make a list of materials required for the installation of the proposed substation. Also draw a single line diagram of the arrangement. A  $3\phi$  11 kv/415 V supply is given. **20**

**Module – III**

15. Design a roadway lighting scheme with the following data :  
Width of the road way = 12 m  
Illumination required = 15 lux  
Mounting height of poles = 9 m  
Arm length = 2 m  
The lamps are placed on one side of the road. Assume any missing data. **20**
16. Design the electrical wiring system of a Cinema theatre of seating capacity 800. Draw the schematic wiring diagram and list the various materials required. Assume all other necessary data. **20**
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