(Pages : 2) 2679

Reg. No. : .....

Name : .....

Eighth Semester B.Tech. Degree Examination, April 2015
(2008 Scheme)
08.803 : ELECTRICAL SYSTEM DESIGN (E)

Time : 3 Hours Max. Marks : 100

PART – A

Answer **all** questions :

1. What is the role of National Electric Code (NEC) in system design ?
2. Define utilisation factor and maintenance factor. What are the factors affecting utilization factor ?
3. Write down some safety aspects applicable to domestic installation.
4. How are building services classified ?
5. Calculate the size of the conductor to be used for wiring a 20 hp, 3ϕ 415 V, 50 Hz induction motor.
6. Why is it necessary to provide earthing in an electrical installation ? State IE rules regarding points to be earthed in an electrical installation.
7. Explain how the ratings of cables and fuses are decided for motor installation.
8. State and explain the laws of illumination.
9. Explain the different types of artificial light sources with reference to their colour rendering properties.
10. Draw a neat sketch of the arrangement of a rising main channel for a five storey building. **(10×4=40 Marks)**

PART – B

Answer **any full** question from **each** Module :

Module – 1

11. The electrical installation of a residential building has the following points.
    Light points : 40 nos.
    6A socket = 11
    Fans and exhaust fan points = 7

P.T.O.

16A power sockets = 7
20A power sockets = 2
Design and draw the schematic diagram showing the rating of
a) Cable b) SFU and c) Distribution board.
Also prepare the list of materials required. 20

OR

12. A residential building having 4 bed rooms, a common bathroom, a kitchen, a drawing cum dining room and a sit out is to be provided with electrical wiring of concealed type. Assume suitable number of electrical points.
1) Determine the size of wires required.
2) Estimate the quantity of material
3) Draw the single line diagram. 20

Module – 2

13. An industry has the following loads.
1) 100 kW, 415 V, 3ϕ induction motor - 2 Nos.
2) 10 kW, 415 V, 3ϕ induction motor - 2 Nos.
3) 2 kW, 415 V, 3ϕ induction motor - 6 Nos.
4) Lighting loads - 8 kW.
Design the HT and LT panels and prepare the details of cable sizes and connected switch gears and fuse rating. 20

OR

14. A cement company is supplied from a substation 5 km away through an O/H line. The company has two transformers in parallel of 1 MVA each and 6% reactance. If the fault level at the substation is 350 MVA design the plate earthing for this company. The overhead line consists of conductors 95 Sq. mm at a spacing of 1 m. 20

Module – 3

15. A community hall has a size 25 m x 15 m. Design the electrical installation, show the details of all electrical fittings, size of cables, switch gears and draw the detailed schematic diagram. 20

OR

16. a) Write short notes on the design of electrical systems related to
1) Fire fighting 5
2) Lifts. 5

b) A main road 2 km long and 8 m wide is required to be illuminated by 85 W sodium vapour lamps. The lamps are mounted on poles 10 m high, so that the minimum level of illumination is 0.8 lux. Design a suitable sheet lighting scheme using underground cable feeder. Give an estimate of materials required. 10