



Reg. No. :

Name :

Eighth Semester B.Tech. Degree Examination, April 2014
(2008 Scheme)
08.803 : ELECTRICAL SYSTEM DESIGN (E)

Time : 3 Hours

Max. Marks : 100

PART – A



Answer **all** questions.

1. How are building services classified ? Explain briefly.
2. Explain the different types of safety aspects incorporated in system design.
3. Explain the relevance of following IS Codes. IS 2675, IS 2309, IS 732, IS 3043.
4. Mention few criterion for the selection of transformers for a substation.
5. Explain the statutory requirements of indoor transformer substations.
6. Explain the basic considerations for selecting a circuit breaker.
7. Distinguish between 3 core, 3.5 core and 4 core cables.
8. Explain the different types of light sources suitable for exterior lighting.
9. What are the basic considerations for road lighting ?
10. What are the characteristic features of a high rise building ? **(10×4=40 Marks)**



PART – B

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

Module – I

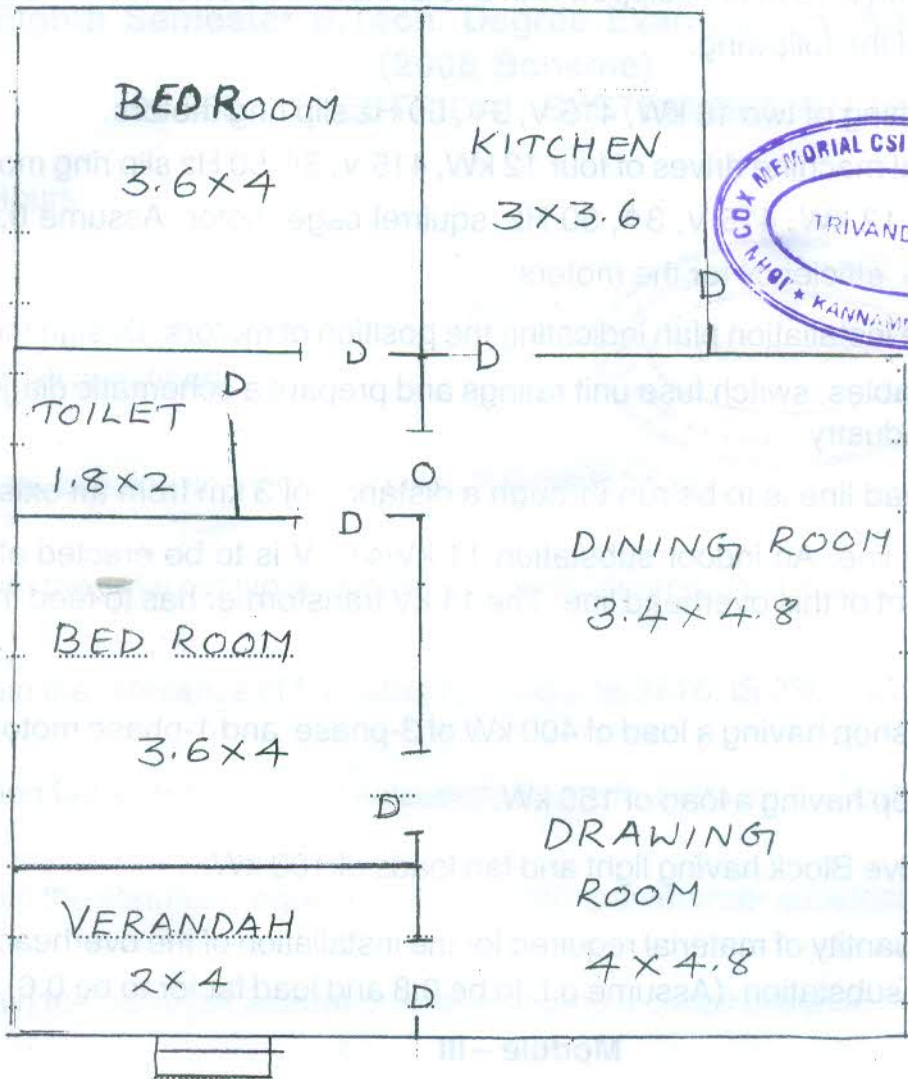
11. A two Bedroom domestic building has following loads.

Sl.No	Room type	Light Load	5 A Socket	Fan load	15 A Socket
1	Bedrooms	20 W CFL, 2 no.s /each room	1 no. in each room	1 no. in each room	1 no./each room
2	Drawing cum dining	20 W CFL, 3 no.s	2 no.s	2 no.s	1 no.
3	Kitchen	20 W CFL, 2 no.s	2 no.	Exhaust fan 1 no.	2 no.s
4	Toilet	20 W CFL, 1 no.	-	Exhaust fan 1 no.	1 no.

Determine the total connected load, suggest the type of supply and determine the number of subcircuits required for installation. Give specifications of main switch, distribution board and draw the schematic diagram.



12.



Prepare the electrical installation plan showing the position of light, fan, socket points and compute the following.

- 1) Connected load of the building.
- 2) Type of supply required.
- 3) Number of light and power circuits.
- 4) Details of Distribution board.



Module – II

13. a) Briefly explain the pre commissioning test of cables. 8
- b) A factory 70 m x 14 m is equipped with a total installed power load of 96 kW consisting of the following.
- 1) Line shafting of two 18 kW, 415 V, 3 ϕ , 50 Hz slip ring motors.
 - 2) Individual machine drives of four 12 kW, 415 V, 3 ϕ , 50 Hz slip ring motors and one 12 kW, 415 V, 3 ϕ , 50 Hz, squirrel cage motor. Assume 0.8 pf and 80% efficiency for the motors.
- Draw the installation plan indicating the position of motors. Design the size of cables, switch fuse unit ratings and prepare a schematic diagram for the industry. 12
14. A 11 kV overhead line is to be run through a distance of 3 km from an existing 11 kV overhead line. An indoor substation 11 kV/415 V is to be erected at the termination point of this overhead line. The 11 kV transformer has to feed the following loads.
- 1) Production shop having a load of 400 kW of 3-phase and 1-phase motor.
 - 2) Foundry shop having a load of 150 kW.
 - 3) Administrative Block having light and fan loads of 100 kW.
- Estimate the quantity of material required for the installation of the overhead line and the indoor substation. (Assume p.f. to be 0.8 and load factor to be 0.6) 20

Module – III

15. a) What are the design considerations of a good lighting scheme? 8
- 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 minimum level of illumination is 0.8 lux. Design a suitable street lighting scheme using underground cable feeder. Estimate the materials required. 12
16. An a.c cinema theatre has a seating capacity of 1000 people. Design the electrical installation, show the details of all electrical fittings, size of cables, switch gears and draw a detailed schematic diagram. 20