

Eighth Semester B.Tech Degree Examination May 2017

(2013 Scheme)

13.801 ELECTRICAL SYSTEM DESIGN(E)

TIME:3 Hrs

(MODEL QUESTION PAPER)

MaxMarks:100

Part-A

(Answer **all** questions each question carries 2 marks)

1. What are the main objectives of electricity act-2003?
2. State the protective measures provided for distribution transformer?
3. Explain the rules for selection of standby generator set.
4. Differentiate-step, touch and transfer potential.
5. Write short note on Air- Conditioning of residential building.
6. How is Industrial Installations classified?
7. Design a starter for 30hp induction motor.
8. What are the permissible values of reactance of earth for large power stations and domestic installations?
9. Write short note on energy efficient lamps.
10. What are the design aspects of fire fighting system.

Part-B

Module-I

(Answer any one full question from each Module)

11. a) What are the scope of NEC? (6)
- b) State the Classification of voltages with standards and specification (4)
- c) What are the functions of SLDC? (5)
- d) What are the relevance of IS 3043, IS 5216 P1-(2) ,IS 732 (5)

OR

12. a) Draw the symbols for the following

i) Distribution board

ii) 16Amp Socket

iii) Three phase squirrel cage induction motor

iv) Exhaust fan

v) Fan regulator

(5)

b) Describe safety equipments to be provided in domestic installation (5)

c) What are the objectives of supply act 1998 (5)

d) Write notes on Bureau of energy efficiency and labeling (5)

### Module-II

13. a) The details of a residential building are given. Dining cum Drawing room – 8m x 4m, Bedroom (3 nos) - 4m x 4m, kitchen -4m x 3m, Work area - 4m x 2m, Toilet (3 nos. attached) - 1.5 x 2.5m, Office room-3m x 3m. Draw the lay-out, design and prepare the materials required for electrification using concealed conduit wiring system. Assume missing data if any. (16)

b) Differentiate ELCB, MCB and MCCB. (4)

OR

14. a) Explain pre-commissioning tests on domestic installations (12)

b) Design illumination for a domestic building with the following details. Bed room – 3m x 3m (2 nos.), Living Room 4m x 3m, Kitchen 3m x 2.5m, dining 3m x 3m, store 2m x 1.5m, stair area 1.5m x 1.5m, Verandha 1m x 1.5m. Assume coefficient of utilization and maintenance factor as 0.8 & 0.6 respectively

### **Module III**

- 15.** Design a sub station suitable for a thickly populated area with a 11kV/433V, 400 kVA transformer . The LT panel consists of six out going feeders 200A two numbers , 100A two numbers and 63 A two numbers of capacity. Draw the single line schematic diagram with all protective devices. Also prepare list of materials required. (20)

**OR**

- 16. a)** Describe a procedure for selection of cables and methods of cables glanding. (8)
- b) A 10 hp three phase induction motor is to be installed in a workshop which is located 25m away from the main distribution panel board. Prepare an estimate of the quantity of materials required . Also show the layout of the wiring. (12)

### **Module-IV**

- 17.** Design an earthing system for an industry having 11KV/433V substation transformer is of 1MVA,7% of reactance and a line reactance of 2ohm. Assume fault level of 200MVA for HV side. soil resistivity is 50ohm-meter. (20)

**OR**

- 18. a)** Explain the general rules for design of a cinema theatre as per cinema regulation act. (10)
- b) What are the factors to be considered for designing high rise building (10)