

Eighth Semester B. Tech Degree Examination May 2017

(2013 Scheme)

13.801 ELECTRICAL SYSTEM DESIGN(E)

Time:3 Hrs

Max Marks:100

Part-A

(Answer all questions each question carries 4 marks)

1. Explain the role of NEC in the design of Electrical installation.
2. What are the main objectives of electricity act-2003?
3. State the procedure for determination of conductor size?
4. Explain the procedure for selection of standby generator set.
5. Differentiate step, touch and transfer potential.
6. Explain Provision of Air conditioning load and give it's specifications.
7. Mention few safety aspects applicable to low and medium voltage installations.
8. Explain the general earthing arrangements in pole mounted transformer substations.
9. Summarise the pre-commissioning tests of transformers.
10. What are the various factors to be considered for the electrification of high rise building.

(10x2 = 20)

Part-B

Module-I

(Answer any one full question from each Module)

11. a) What are the scope of NEC? (6)
- b) Classification of standards of voltage 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) 15Amp Socket
 - iii) Three phase squirrel cage induction motor
 - iv) Exhaust fan
 - v) Fan regulator (5)
- b) Describe Safety Equipments in Domestic Installation (5)
- c) What are the objectives of Supply Act 1948 (5)
- d) Write note 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 (3nos) - 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 estimate the material required for electrification using concealed conduit wiring system Assume missing data if any (12)
- b) Differentiate ELCB, MCB and MCCB. (4)
- c) Describe the Procedure to design the size of cable in domestic installation. (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 – 3mx3m (2no.s), Living Room 4mx3m , Kitchen 3mx2.5m , Dining 3mx3m, store 2mx1.5m, Stair area 1.5mx1.5m, Verandha 1mx1.5m. Assume coefficient of utilization and maintenance factor as 0.8 & 0.6 respectively (8)

Module III

15. a) Draw the lay out of a 11KV /433V Distribution transformer with all accessories with specification (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 and estimate the quantity of materials required and its cost. Also show the layout of the wiring.

(12)

Module-IV

- 17 .a) 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 common design procedure for a Cinema Theatre as per Cinema Regulation Act. (10)
- b) What are the factors to be considered for designing high rise building (10)