C 21442 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE EXAMINATION APRIL 2017

EE/PTEE 09 801—ELECTRICAL SYSTEM DESIGN

(2009 Admissions)

Time : Three Hours Maximum : 70 Marks

Part A

Answer **all** *questions.*

1. Write down the functions of MCCB and VCB.
2. Define Demand factor.
3. Give any *four* types of substations according to the service.
4. What is called lamp efficiency and lamp efficacy ?
5. What is called lamp shielding angle ?

(5 × 2 = 10 marks)

Part B

Answer any **four** *questions.*

6. Differentiate between neutral wire and earth wire.
7. Why fuse is not used in neutral wire ?
8. What is meant by harmonics ? How it can be eliminated ?
9. Distinguish between power transformer and distribution transformer ?
10. Define the laws of illumination.
11. List down the qualities of good lighting schemes.

(4 × 5 = 20 marks)

Part C

Answer **all** *questions.*

12. Discuss the relevant IE rules pertaining to the following :

    (a) Declared voltage and frequency of supply to consumer.

    (b) Clearance between the nearest conductor and any part of the building for voltage upto and including 11 kV.

Turn over

(c) Minimum clearance above ground for a low voltage line crossing a street.

(d) Sharing of expenditure for service connection and distribution mains between licensee and the consumer

Or

13. What is the purpose of earthing ? Explain the design of pipe earthing with neat diagram.

14. What are the causes of low power factor in electric supply system ? Explain automatic power factor correction method in detail ?

Or

15. (a) Discuss the different systems of wiring for internal electrical installation.

(b) Give a neat sketch showing all details for a typical house wiring scheme commencing from the service connection.

16. Sketch the layout for a typical 16MVA-110/11kV outdoor substation having one incoming and two outgoing. List down all the equipments.

Or

17. Draw the elevation of an H pole mounted substation and show all the equipments required.

18. With diagram describe the working principle of :

(a) Mercury vapour lamp.

(b) Fluorescent lamp.

Or

19. A lamp having a uniform candle power of 200 in all directions is provided with a reflector which directs 60% of total light uniformly on to a circular area of 10 m diameter. The lamp is hung 6 m above the area. Calculate the illumination a) at centre b) at the edge of the surface with and without reflector.

(4 × 10 = 40 MARKS)