

FACULTY OF ENGINEERING

B.E. 4/4 (E&EE) II-Semester (Main) Examination, May 2011

**Subject : Electrical Power Distribution Engineering
(Elective-II)**

Time : 3 Hours

Max. Marks: 75

Note: Answer all questions of Part - A and answer any five questions from Part-B.**PART – A (25 Marks)**

1. Define Diversity factor and coincidence factor. (2)
2. Draw a single-line diagram of a typical distribution system and name all parts of distribution system. (3)
3. Write the rules in selecting the ideal location for a substation. (3)
4. Write the advantages of single bus scheme and double bus-double breaker distribution substations. (2)
5. Write the factors affecting conductor size selection in the distribution system. (3)
6. Write the functions of Tie lines in a power system network. (2)
7. Define Voltage Regulation of a feeder. (2)
8. Show that the voltage drop in the single phase two wire ungrounded lateral with full capacity neutral is six times larger than one in the equivalent three-phase four wire balanced lateral. (3)
9. Write the different applications areas SCADA. (3)
10. Mention the fundamental requirements for communication channel used in SCADA systems. (2)

PART – B (5x10=50 Marks)

- 11.(a) The input to a subtransmission system is 87,600,000 kwh annually on the peak load day of the year, the peak is 25,000 kW and the energy input that day is 3,00,000 kWh. Find the load factors for the year and for the peak load day. (4)
- (b) Explain different types of rate structures used by utilities. (6)
12. Derive the 'K' constant of a feeder, when a limped – sum load is connected at the end of the main feeder. (10)
- 13.(a) Mention the different constraints considered in designing the distribution system. (3)
- (b) Explain the secondary networks, with the help of one line diagram. (7)
- 14.(a) A 3-ph 600-hp, 50Hz, 4200 V wye-connected Induction motor has a full load efficiency of 89 percent, a lagging power factor of 0.75, and is connected to a feeder. If it is desired to correct the p.f. of the load to a lagging power factor of 0.92 by connecting three capacity at the load, determine the following:
 - (i) Rate of capacitor bank
 - (ii) Re capacitance of each unit if the capacitors are connected in delta
 - (iii) Re capacitance of each unit if the capacitors are connected in star (10)
- 15.(a) Explain different functions of consumer information service package. (5)
- (b) Define (i) LAN (ii) MMI (iii) Modem (iv) E Internet (5)
- 16.(a) Explain the types of distribution transformers. (5)
- (b) Explain different communication methods used in SCADA System. (5)
17. Write short notes on the following :
 - (a) Substation bus schemes
 - (b) Power factor improvement methods used in distribution system