Code No: **R4102A** **R10** **Set No. 1**

IV B.Tech I Semester Supplementary Examinations, March/April - 2016

ELECTRICAL DISTRIBUTION SYSTEMS

(Electrical and Electronics Engineering)

Time: 3 hours **Max. Marks: 75**

Answer any FIVE Questions
All Questions carry equal marks
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1 a) What is distribution system? Explain the elements of distribution system. [8]

b) The annual peak load input to a primary feeder is 2000 kW. The total copper loss at the time of peak load is 100 kW. The total annual energy supplied to the sending end of the feeder is 5.61×10^6 Kwh. Find
i) The annual loss factor ii) The annual copper loss energy [7]

2 a) Explain feeder distance coverage principle and feeder area coverage principle as a function of feeder voltage level. [8]

b) Explain the basic design practice of secondary distribution system. [7]

3 a) Derive the expression for substation service area with 'N' primary feeders. [7]

b) A 5 mile long feeder is supplying a 2000 KVA load of increasing load density starting at a substation. If the 'K' constant of the feeder is given as 0.00001 %VD per KVA-Mile. Determine the percentage voltage drop in the main. [8]

4 a) Discuss the method of approximate calculations in terms of resistance and reactance for the calculation of voltage drop in 1-phase AC distributor. [8]

b) Derive the expression for voltage drop in feeder line with uniformly increasing load. [7]

5 Write short notes on
a) Low voltage fuses b) Automatic circuit reclosers [15]

6 a) Explain the Fuse to Circuit breaker coordination procedure. [8]

b) What is the need for coordination? List the various coordination of protective devices. [7]

7 a) Explain the effect of fixed and switched capacitor banks. [7]

b) If a power system has 15000 KVA capacity and is operating at a power factor of 0.65 lagging and the cost of synchronous capacitor is Rs 900/KVA. Find the investment required to correct the power factor to 0.85 lagging. [8]

8 a) Explain the method of voltage control by series capacitors and mention its advantages. [9]

b) With the aid of schematic diagram and phasor diagram explain line drop compensation of induction voltage regulator [6]