PVP 12

Code: EE7T6A

IV B.Tech - I Semester – Regular Examinations - November 2015

ELECTRICAL DISTRIBUTION SYSTEMS
(ELECTRICAL & ELECTRONICS ENGINEERING)

Duration: 3 hours Max. Marks: 70

Answer any FIVE questions. All questions carry equal marks

1. a) Explain the importance of load modeling & its characteristics in distribution systems. 8 M

b) The annual peak load input to a primary feeder is 2000kW. The total copper loss at the time of peak load is 100kW. The total annual energy supplied to the sending end of the feeder is 5.61×10^6 kWh. Calculate 6 M
(i) annual loss factor, (ii) total annual copper loss energy and its value at Rs. 1.5/kWh and
(iii) load factor of the primary feeder.

2. a) Compare radial and loop types of primary distribution feeders. 8 M

b) Explain the basic design practice of the secondary distribution system. 6 M

3. a) How do you analyze a substation service area with 'n' primary feeders? 8 M

b) What are the advantages of optimally located substation? 6 M

4. Derive the expressions for voltage drop and power loss of non three phase distribution systems and compare with the three phase balanced system. 14 M

5. a) Explain the objectives of distribution system protection in detail. 8 M

b) Explain the operation of a circuit breaker with its merits and demerits. 6 M

6. a) What is coordination? What are the differences between protecting and protective devices? 7 M

b) Explain in detail how the co- ordination of various protective devices helps in improving system performance. 7 M

7. a) Explain the procedure employed to determine the best capacitor location. 6 M

b) A 3-phase, 50Hz, 400V motor develops 74.6 kW, the power factor being 0.75 lagging and efficiency 93%. A bank of capacitors is connected in delta across the supply terminals and power factor raised to 0.95 lagging. Each of the capacitance units is built up of 4 similar 100V capacitors. Determine the capacitance of each capacitor. 8 M

8. a) Explain the effect of line drop compensation on voltage control. 6 M

b) With the help of a vector diagram, show how a series capacitor boosts the voltage? What are the drawbacks of this method? 8 M