Code : R7410210

R07

IV B.Tech I Semester (R07) Supplementary Examinations, May 2012
ELECTRICAL DISTRIBUTION SYSTEMS
(Electrical & Electronics Engineering)

Time: 3 hours   Max Marks: 80

Answer any FIVE questions
All questions carry equal marks
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1. (a) Define load factor and loss factor. Also derive the relation between load factor and loss factor.
   (b) The annual peak load input to a primary feeder is 1500 KW. The voltage drop and losses shows that the total loss at the time of peak load is 100 KW. The total annual energy supplied to the sending end of the feeder is 5.5×10^6 KWh.
      (i) Determine the annual loss factor.
      (ii) Calculate the total annual energy loss and the annual cost if the unit change in Rs 2.50/-.

2. (a) Discuss the design consideration of loop type primary feeder.
   (b) Explain the basic design practice of secondary distribution system.

3. (a) Compute the percentage voltage drop of substation service area supplied with 'n' primary feeders.
   (b) Discuss the benefits which are derived through the optimal location of substations.

4. (a) Derive the approximate voltage drop and power loss equation of primary feeder of a uniformly distributed load.
   (b) Consider a 3-phase, 3 wire, 400 v secondary system with balanced loads at A, B and C as shown. Determine (i) Total voltage drop (ii) Real & reactive power per phase for each load (iv) the KVA output and load p.f. of the distribution transformation.
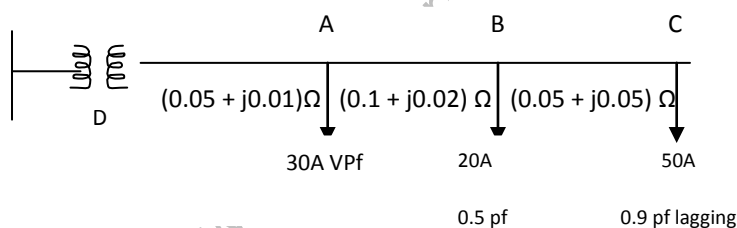
5. (a) Explain the principle of operation of
         (i) Fuse (ii) Line sectionalizes
   (b) Explain the objectives of distribution system protection.

6. (a) Explain circuit breaker to auto recloser coordination.
   (b) Write down the general coordination procedure.

7. (a) What is mean by compensation? Make a comparison between series and shunt compensation.
   (b) A synchronous motor improves the p.f of a load of 250 kw from 0.8 lagging to 0.9 lagging simultaneously the motor carries a load of 100kw. Determine (i) The leading KVAR taken by the motor. (ii) KVA rating of the motor and (iii) P.f. at which the motor operates.

8. (a) Explain why the voltage control and p.f correction are necessary in power systems.
   (b) Write short notes on line drop compensation.

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