

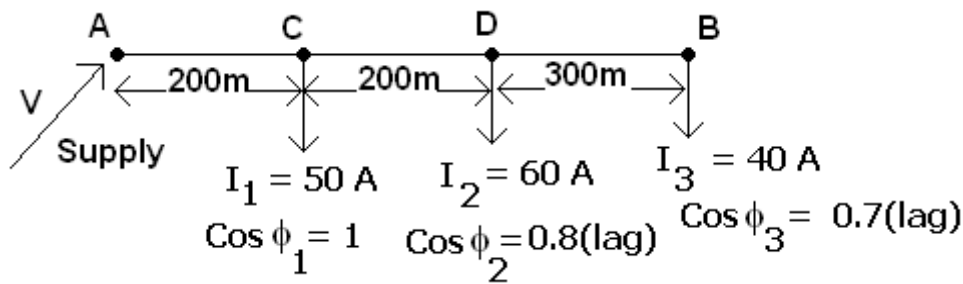
IV B.Tech I Semester Supplementary Examinations, April/May 2005
ELECTRICAL DISTRIBUTION SYSTEMS
(Electrical & Electronic Engineering)

Time: 3 hours

Max Marks: 80

Answer any FIVE Questions
 All Questions carry equal marks

1. Explain the various factors affecting the distribution system planning.
2. (a) Explain how the load growth in a distribution system can be obtained.
 (b) A distribution substation experiences an annual peak load of 3,500 kW. The total annual energy supplied to the primary feeder circuits is 10^7 kWh. Find
 - i. the annual average power
 - ii. the annual load factor
3. Give the various loading and voltage level factors that influence the design and operation of primary feeders.
4. How do you analyse a substation service area with 'n' primary feeders.
5. Consider the single phase radial distributor shown in the following figure



the magnitude of load currents, p.f.s and distances are indicated in the figure. The resistance and reactance of each wire are 0.1 ohm and 0.2ohms per km respectively. It is required to maintain voltage at point B as $230\angle 0^\circ$ Volts, find

- (a) voltage drop in the three sections
 - (b) total voltage drop in the feeder
 - (c) supply voltage, current and power factor
 - (d) KVA output of supply
- The p.f. angles of individual loads are w.r.t. voltage at point B.
6. (a) What are the types of common faults that occur in a distribution system? Explain them with proper line diagram.
 (b) Considering a typical example, describe the procedure for fault current calculations in a distribution system, mentioning the assumptions to be made for the analysis.

7. A 3-phase transformer rated 7000KVA and has a over load capability of 125% of the rating. If the connected load is 1150KVA with a 0.8 pf (lag), determine the following :
- (a) The KVAR rating of shunt capacitor bank required to decrease the KVA load of the transformer to its capability level,
 - (b) the p.f. of the corrected level,
 - (c) the KVAR rating of the shunt capacitor bank required to correct the load p.f. to unity.
8. (a) Briefly explain the line drop compensation on voltage control..
- (b) How an AVB can control voltage? With the aid of suitable diagram explain its function.

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