Code: 9A02701 **R09**

B.Tech IV Year I Semester (R09) Supplementary Examinations June 2017

DISTRIBUTION OF ELECTRIC POWER

(Electrical & Electronics Engineering)

Time: 3 hours Max. Marks: 70

Answer any FIVE questions
All questions carry equal marks
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1 (a) Derive the relationship between load factor and loss factor.
(b) Assume that the annual peak load of a primary feeder is 2500 kW, at which the power is 70 kW per three phases. Assuming an annual loss factor of 0.15. Determine: (i) The average annual power loss. (ii) The total annual energy loss due to the copper losses of the feeder.

2 (a) Write the comparison between DC and AC distribution systems.
(b) A 2-wire DC distributor AB, 600 m long as loaded as under:

Distance from (mts):	150	300	350	450
Loads (Amps):	100	150	250	300

The feeding point A is maintained at 440 V and that of B at 430 V. If each conductor has a resistance of 0.02 per 100 m, calculate: (i) The current supplied from A to B. (ii) The power dispatched in the distributor.

3 (a) Compare the radial and loop type primary feeders.
(b) Give a line diagram for ring type primary feeder and explain he different components.

4 (a) Write different parameters to be considered for location of substation.
(b) Explain the single bus bar system with sectionalization and what are its merits and demerits.

5 (a) Explain the effect of shunt compensation on distribution system.
(b) A synchronous motor improves the power factor of a load of 300 kW from 0.8 lagging to 0.9 lagging. Simultaneously the motor carries a load of 150 kW. Determine: (i) The leading kVAR taken by the motor. (ii) kVA rating of the motor. (iii) Power factor at which the motor operates.

6 (a) What are the power losses in AC distribution system? How the power loss can estimate approximately?
(b) Derive the voltage drop and power loss of non-three phase distribution systems and compare with three phase balanced system.

7 (a) Write procedure for economic justification for best capacitor location.
(b) A 400 V, 50 cycles, 3-phase line delivers 209 kW at 0.8 p.f lag. It is desired to bring the line p.f to unity by installing shunt capacitors. Calculate the capacitance if they are (i) Star connected. (ii) Delta connected.

8 (a) Explain the objectives of distribution system protection.
(b) Explain the principle of operation of (i) Circuit recloser. (ii) Circuit breaker.

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