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B.E./B.Tech (Full Time) DEGREE END SEMESTER EXAMINATIONS, APRIL/MAY 2013

ELECTRICAL AND ELECTRONICS ENGINEERING

SEMESTER IV – (REGULATIONS 2008)

EE9251– TRANSMISSION AND DISTRIBUTION

Time:3 hrs

Max Marks:100

Answer ALL Questions

Part A – (10×2=20)

1. List any two advantages of HVDC system
2. Mention the highest and the lowest voltage level available in our country.
3. Distinguish between single and double circuit lines.
4. What is proximity effect?
5. Classify transmission lines based on their lengths.
6. State Ferranti effect
7. Define string efficiency
8. Where does maximum and minimum stress occur in cables?
9. What is meant by tower spotting?
10. Mention any four major electrical components present in substations.

Part B – (5×16=80)

11. (i) Consider a distributor AB of length ' l ' meters having resistance ' r ' ohms per metre run (go and return) fed at both ends with different voltages and loaded with uniform loading. Derive an expression for point of minimum potential and find current at this point. (8)

(ii) A 800 m long, two wire DC distributor fed from both ends, is loaded uniformly at the rate of 1.2 A/m run. If the resistance of the distributor is 0.1 Ω /km (go and return) and feed points are maintained at 245 V and 240 V respectively, calculate minimum voltage, its point of occurrence and currents supplied from feeding points. Also find current at the point of minimum potential. (8)
12. a.(i) Show that the inductance per unit length of an overhead line due to internal flux linkages is constant. (8)

(ii) A three phase 132 kV, 50 Hz overhead line has ACSR conductors of equivalent copper area 1.5 cm² and effective diameter 39.8 mm, spaced equilaterally 8 m apart. Find line parameters (R, L, and C), charging current and charging MVA. Resistivity of copper is 1.73×10^{-6} ohm-cm. (8)

OR

13. a. What are the properties of good heating element? Describe various methods of resistance heating with applications. (16)

OR

- b. What is meant by electric arc welding process? With suitable diagrams, explain different welding processes with applications (16)

- 14.a. Describe construction and working of domestic refrigerator with suitable diagram. Also draw the schematic diagram of electric circuit of a refrigerator and explain the various components. (16)

OR

- b. Describe the basic elements of an air-conditioning system. Also explain air-conditioning cycle with suitable diagrams. (16)

- 15.a.(i) List out and explain any four power quality issues in the system. (8)

- (ii) Write short notes on energy management. (8)

OR

- b. State the causes for low power factor in the system. What are methods used for power factor improvement? (16)