Reg. No. : | | | | | | | | | | | |

Question Paper Code : P 1287

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2009.

Fourth Semester

Electrical and Electronics Engineering

EE 1252 — TRANSMISSION AND DISTRIBUTION

(Common to B.E. (Part-Time) Third Semester Regulation 2005)

(Regulation 2004)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What is the level of voltage for HVDC transmission?
2. What is breakeven distance?
3. What is skin effect?
4. What is bundling of conductors?
5. List out any two reasons for line loss in a transmission line?
6. Define visual critical voltage.
7. Write down the expression for insulation resistance of a single core cable.
8. Define string efficiency.
9. List the types of substations.
10. Mention the advantages of ring main distribution.

PART B — (5 × 16 = 80 marks)

11. (a) (i) Draw the structure of a typical power system. Locate various sections of it and explain them. (8)

(ii) Explain about UPFC. (8)

Or

(b) (i) What are the advantages and disadvantages of HVDC over HVAC transmission system? (8)

(ii) Write short notes on SVC. (8)

12. (a) (i) Derive the expression for capacitance of a single phase overhead line. (10)

(ii) Find out the capacitance of a single phase line of 30 km long consisting of two parallel wires each 4 mm diameter and 1.5 m apart. (6)

Or

(b) (i) Calculate the GMR of a conductor having seven strands each of 3 mm radius. (8)

(ii) Explain why and how transposition of three phase transmission lines are done. (8)

13. (a) A 50 Hz, 3 phase transmission line 30 km long has a total series impedance of $(40 + j 125)$ ohm and shunt admittance of 10^{-3} mho. The load is 50 MW at 220 kV with 0.8 lagging power factor. Find the sending end voltage, current and power factor. Use nominal π method. (16)

Or

(b) Explain the following :

(i) Phenomenon of corona (4)

(ii) Effects of corona (4)

(iii) Methods of reducing corona. (8)

14. (a) (i) With a neat sketch explain the construction of pin type insulator. (8)

(ii) Explain the methods of improving string efficiency. (8)

Or

(b) A 66 KV, single core metal sheathed cable is to be graded by means of a metallic inter sheath. Calculate the diameter of the inter sheath and the voltage at which it must be maintained in order to obtain minimum overall diameter. The maximum voltage gradient at which the insulating material can be worked is 60 KV/cm. Derive the formula used. (16)

15. (a) (i) With neat diagrams explain the different types of bus bar arrangements used in substations. (8)

(ii) Explain various methods of neutral grounding. (8)

Or

(b) (i) Explain the various systems of a.c. distribution. (8)

(ii) Explain the ring main system of distribution with interconnector what is the purpose of interconnector. (8)