SATHYABAMA UNIVERSITY

(Established under section 3 of UGC Act, 1956)

Course & Branch: B.E – EEE
Title of the paper: Transmission & Distribution

Semester: V   Max.Marks: 80
Sub.Code: 414506   Time: 3 Hours
Date: 24-04-2009   Session: AN

PART – A   (10 x 2 = 20)
Answer All the Questions

1. What is meant by STACOM?

2. State Kelvin's law and its limitations.

3. Distinguish between stranded and bundled conductors.

4. What is meant by proximity effect?

5. What is the use of power circle diagrams?

6. Define surge impedance.

7. Draw the stringing chart.

8. A single core cable has a conductor diameter of 1cm and internal sheath diameter of 1.8cm. If impregnated paper of relative permittivity 4 is used as the insulation, calculate the capacitance for 1km length of the cable.

9. Define space height ratio.

10. Define utilization factor.

Answer All the Questions

11. Compare EHVAC and HVDC transmission.

(or)

12. (a) Draw and explain the structure of modern electric power system with various voltage levels.   (8)

(b) Draw a simple model of UPFC.   (4)

13. (a) Derive an expression for loop inductance of a 1 – phase transmission line.

(b) A single phase transmission line has two parallel conductors 3m apart, the radius of each conductor being 1cm. calculate the loop inductance per km length of the line if the material of conductors is (i) copper   (ii)   steel   with   relative permeability of 100.

(or)

14. (a) Derive an expression for capacitance of a 3-phase line when the conductors are symmetrically placed.

(b) Calculate the capacitance of a 100km long 3-phase, 50Hz overhead transmission line consisting of 3 conductors each of diameter 2cm and spaced 2.5m at the corners of an equilateral triangle.

15. Using rigorous method, derive expressions for sending end voltage and current for a long transmission line.

(or)

16. (a) Explain the classification of lines based on their length transmission.

(b) A short 3-phase transmission line with an impedance of $(6+j8)\Omega$ per phase has sending and receiving end voltage of 120kV and 110kV respectively for some receiving end load at a pf of 0-9 lagging. Determine power output and sending power factor.

17. Elaborate the various methods to improve the string efficiency.

(or)

18. (a) Deduce an expression for the capacitance of a single core cable.

(b) A 33kV, 50Hz, 3-phase underground cable, 4km long uses three single core cables. Each of the conductor has a diameter of 2.5cm and the radial thickness of insulation of 0.5cm and the radial thickness of insulation is 0.5cm. Determine

(i) Capacitance of the cable/phase
(ii) Charging current/phase
(iii) Total charging kVAR.

The relative permittivity of insulation is 3.

19. Explain the working of the following

(a) Peterson coil
(b) Surge absorber.

(or)

20. Explain the various lighting schemes.