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

Question Paper Code: 41032

B.E. / B.Tech. DEGREE EXAMINATION, APRIL 2015.

Fourth Semester

Electrical and Electronics Engineering

01UEE403 –TRANSMISSION AND DISTRIBUTION

(Regulation 2013)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions.

PART A - (10 x 2 = 20 Marks)

1. State different voltage levels used in transmission of power in India.
2. What are the advantages of high voltage AC transmission?
3. What is skin effect?
4. What is meant by transposition of line conductors?
5. Define voltage regulation
6. Mention the significance of surge impedance loading
7. State the properties of insulating materials.
8. What is the function of sheath in a cables?
9. Mention the factors that affect sag in the transmission line.
10. Compare indoor and outdoor substations.

PART - B (5 x 16 = 80 Marks)

11. (a) (i) Draw and explain the structure of power systems . (10)

(ii) Discuss the advantages and disadvantages of HVDC transmission. (6)

Or

(b) (i) Discuss the following distribution system

(1) Ring main system.

(2) Interconnected system. (10)

(ii) Explain the requirements of good distribution system. (6)

12. (a) Derive the expression for the capacitance of unsymmetrical and symmetrically spaced three phase overhead line . (16)

Or

(b) (i) Calculate the loop inductance per km of a single phase transmission line consisting of two parallel conductors 1.5 *m* apart and 1.5 *cm* in diameter. Also calculate the Reactance of the transmission line if it is operating at a frequency of 50 *Hz*. (8)

(ii) Explain corona effect. State the different factor which affects corona and methods of reducing corona effect. (8)

13. (a) A three phase, 50 Hz over head transmission line 100 km long has the following constants: Resistance / km / phase = 0.1Ω, Inductive reactance / km / phase = 0.2Ω Capacitive susceptance / km /phase = 0.04×10^{-4} mho. Determine (i) Sending end current (ii) Sending end voltage (iii) Sending end power factor (iv) Transmission efficiency when supplying a balanced load of 10,000 *kW* at 66 *kV* with p.f. of 0.8 lagging. Use nominal T method. (16)

Or

(b) Derive the expression for efficiency and regulation of long transmission line using rigorous method. (16)

14. (a) (i) Obtain the expression for string efficiency of suspension insulator. (8)

(ii) Explain about the construction of gas pressure cable. (8)

Or

(b) Explain any two methods of grading of cables with necessary diagrams. (16)

15. (a) Derive the expressions for sag and tension in a power conductor when the towers are placed both at equal and unequal level. (16)

Or

(b) Explain the different methods of neutral grounding with neat diagram. (16)