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

Question Paper Code: 31433

B.E. / B.Tech. DEGREE EXAMINATION, NOVEMBER 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. What are the differences between transmission and distribution?
2. What are the advantages of HVDC transmission?
3. What is transposition of conductors?
4. Write the expression for capacitance of three phase line, when the conductors are unsymmetrically spaced.
5. What is Ferranti effect?
6. Define short and medium transmission line.
7. Define string efficiency.
8. Name the different parts of a cable.
9. What are the factors affecting sag?
10. What are the methods of neutral grounding?

PART - B (5 x 16 = 80 Marks)

11. (a) (i) Draw the structure of electrical power system and explain in detail. (12)

(ii) State the needs for transmission inter connection and define FACTs. (4)

Or

(b) Sketch and brief various stages of HVDC transmission systems and also explain the types HVDC systems with neat diagram. (16)

12. (a) Derive the expression for inductance of three phase over head transmission line, when (i) conductors are spaced symmetrically (ii) conductors are spaced unsymmetrically. (16)

Or

(b) (i) Define Carona and explain the theory of Carona formation, factors affecting Carona and methods of reducing Carona effects. (8)

(ii) Calculate the Capacitance of a 100 *km* long 3-phase, 50*Hz* over head transmission line consisting of 3 conductors, each of diameter 2 *cm* and spaced 2.5 *m* at the corners of an equilateral triangle. (8)

13. (a) A 3-phase, 50 *Hz*, 150 *km*, line has a resistance, inductive reactance and capacitive shunt admittance of 0.1Ω, 0.5Ω and 3×10^{-6} *S* per *km* per phase. If the line delivers 50*MW* at 110 *kV* and 0.8 p.f. lagging, determine (i) the sending end voltage and current, (ii) regulation and (iii) transmission efficiency. Assume a nominal π circuit for the line. (16)

Or

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

14. (a) (i) Explain inter sheath grading of cables with necessary diagram. (8)

(ii) Derive the expression for capacitance of a single core cable. (8)

Or

(b) Derive the expression for string efficiency of a suspension type insulator and brief the methods of improving string efficiency. (16)

15. (a) (i) With a neat sketch, explain double bus with double breaker. State its advantages and disadvantages. (8)

(ii) Explain resonant grounding with neat diagram. (8)

Or

(b) Derive the expression for sag on the transmission line with the effect of wind and ice loading, when the supports are placed both at equal and unequal level. (16)

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