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Question Paper Code : 77132

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

Fourth Semester

Electrical and Electronics Engineering

EE 6402 — TRANSMISSION AND DISTRIBUTION

(Regulation 2013)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Distinguish between a feeder and a distributor.
2. Why is electrical power preferably to be transmitted at a high voltage?
3. Define proximity effect on conductors.
4. A three phase transmission line has its conductor at the corners of an equilateral triangle with side 3 m. The diameter of each conductor is 1.63 cm. Find the inductance per km per phase of the line.
5. What is the importance of voltage control?
6. What is Ferranti effect?
7. What is the purpose of insulator?
8. What is the main purpose of armouring?
9. What are the materials mainly used in bus bars?
10. What are the classifications of substation according to service?

PART B — (5 × 16 = 80 marks)

11. (a) Discuss in detail the advantages, disadvantages and applications of HVDC transmission. (16)

Or

- (b) Explain with a neat layout the modern EHV system. What is the highest voltage level available in India for EHV transmission? (16)

12. (a) Explain the following with respect to corona (i) corona (ii) effects of corona (iii) disruptive critical voltage (iv) visual critical voltage (v) corona power loss. Also explain the interference with neighbouring communication circuits. (16)

Or

- (b) A three phase circuit line consists of 7/4.5 mm hard drawn copper conductors. The arrangement of the conductors is shown in Figure.12.b. The line is completely transposed. Calculate inductive reactance per phase per km of the system. (16)

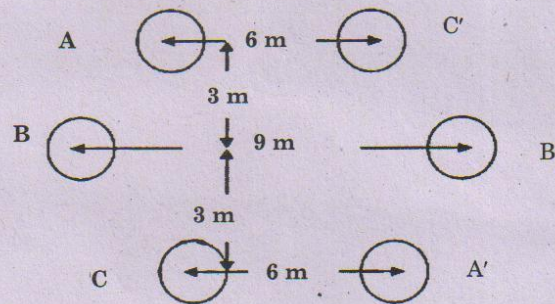


Figure. 12.b

13. (a) A balanced three phase load of 30 MW is supplied at 132 kV, 50 Hz and 0.85 p.f. lagging by means of a transmission line. The series impedance of a single conductor is $(20+j52) \Omega$ and the total phase-neutral admittance is 315×10^{-6} Siemen. Using nominal T method, Determine (i) A, B, C and D constants of the line (ii) sending end voltage (iii) regulation of the line. (16)

Or

- (b) Explain the real and reactive power flow in lines. Also explain the methods of voltage control. (16)
14. (a) In a 3-unit insulator, the joint to tower capacitance is 20% of the capacitance of each unit. By how much should the capacitance of the lowest unit be increased to get a string efficiency of 90%? The remaining two units are left unchanged. (16)

Or

- (b) What are the various properties of insulators? Also briefly explain about suspension type and pin type insulators. Draw the schematic diagram. (16)

15. (a) Write short notes on :

(i) Sub mains

(ii) Stepped and tapered mains

(iii) Grounding grids

(16)

Or

(b) Explain the following:

(i) Neutral grounding

(ii) Resistance grounding

(16)
