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Question Paper Code : X20486

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2020

Fourth Semester

Electrical and Electronics Engineering

EE 6402 – TRANSMISSION AND DISTRIBUTION

(Regulations 2013)

(Common to PTEE6402 – Transmission and Distribution for B.E. (Part-Time) –
Electrical and Electronics Engineering – Fourth Semester – (Regulations – 2014))

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. Distinguish between self and mutual GMD.
4. Mention the advantages of transposition of conductors.
5. State the condition for maximum power delivered and draw the power angle diagram.
6. Mention the various methods of voltage control in transmission lines.
7. What are the tests performed on the insulators ?
8. Classify the cables used for three phase service.
9. Enlist any two factors that affect sag in the transmission line.
10. Write down the types of grounding.

PART – B

(5×13=65 Marks)

11. a) i) Explain the effect of high voltage on volume of copper and on efficiency. (7)
ii) Derive suitable expressions to determine the voltage drop and power loss in an uniformly loaded distributor of length 'l' fed at both ends with equal voltages. (6)
- (OR)
- b) i) Make a comparison between EHVAC and HVDC system based on economics. (7)
ii) Explain the different HVDC links. (6)



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.

(2+3+3+3+2)

(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.

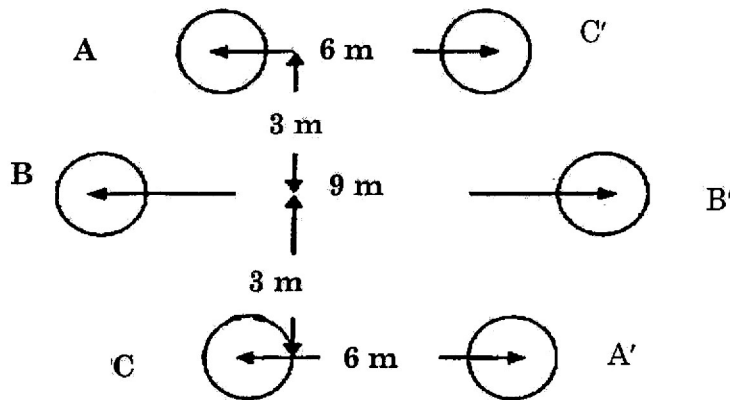


Figure 12-b

13. a) What are the different methods available for Voltage Control and explain any one method.

(OR)

- b) i) Explain the meaning of performance of lines. (5)
- ii) A single phase 50 Hz generator supplies an inductive load of 6 MW at 0.8 pf lagging by means of an overhead line 15 km long. The line resistance and inductance are 0.02 ohm/km and 0.85 mH/km. The voltage at the receiving end is 11 kV. Determine the sending end voltage and voltage regulation. (8)

14. a) i) Briefly explain the different methods to improve string efficiency of suspension type insulators. (6)
- ii) A three unit insulator string is fitted with a guard ring. The capacitances of the link pins to metal work and guard ring can be assumed to be a 15% and 5% of the capacitance of each unit. Determine voltage distribution and string efficiency. (7)

(OR)

- b) Explain the methods of grading of cables with neat diagrams and equations.



15. a) Assuming that the shape of an overhead line can be approximated by a parabola, deduce expressions for calculating sag and conductor length. How can the effect of wind and ice loadings be taken into account ?

(OR)

b) Describe any four methods of power system grounding.

PART – C

(1×15=15 Marks)

16. a) A 2 km long 3 core, 3 ϕ cable has capacitance 0.5 μ F/km between two conductors bonded with sheath and their conductor. The capacitance between the conductors is also measured when bonded together and the sheath and found to be 0.75 μ F/km. Determine

i) Capacitances between phases.

ii) Capacitance between the conductor and the sheath.

iii) Effective per phase capacitances.

iv) Charging current if the supply voltage is 11 kv, 50 Hz.

(3+4+4+4)

(OR)

b) Explain your understanding about

i) Transmission and distribution of power.

(10)

ii) Write a short notes on stepped and tapered mains.

(5)
