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Question Paper Code	12509
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B.E. / B.Tech - DEGREE EXAMINATIONS, NOV / DEC 2023

Fourth Semester

Electrical and Electronics Engineering

20EPC402 - TRANSMISSION AND DISTRIBUTION

(Regulations 2020)

Duration: 3 Hours

Max. Marks: 100

PART - A (10 × 2 = 20 Marks)

Answer ALL Questions

- | | <i>Marks,
K-Level, CO</i> |
|--|-------------------------------|
| 1. Mention the factors governing the inductance of a transmission line. | <i>2,K2,CO1</i> |
| 2. Why skin effect is absent in dc system? | <i>2,K1,CO1</i> |
| 3. Define Ferranti effect. | <i>2,K1,CO2</i> |
| 4. Distinguish between short, medium and long transmission line. | <i>2,K1,CO2</i> |
| 5. State the properties of insulating materials. | <i>2,K1,CO3</i> |
| 6. List the methods of improving string efficiency. | <i>2,K1,CO3</i> |
| 7. What is the purpose of insulation in a cable? | <i>2,K1,CO4</i> |
| 8. How cables are classified based on operating voltage? | <i>2,K2,CO4</i> |
| 9. Mention the advantages of a 3 wire DC Distribution system over a 2 wire DC Distribution system. | <i>2,K2,CO5</i> |
| 10. List out the basic types of FACTS Controllers. | <i>2,K2,CO5</i> |

PART - B (5 × 13 = 65 Marks)

Answer ALL Questions

11. a) Draw and explain the structure of modern power systems with indicating all the voltage levels. *13,K2,CO1*
- OR**
- b) Find the capacitance between the conductors of a single phase has 10 km long, diameter of each conductor is 1.213cm. The spacing between conductors is 1.25m. Also find the capacitance of each conductor neutral. *13,K3,CO1*
12. a) Explain the procedure for finding the transmission efficiency and voltage regulation of a long transmission line. *13,K3,CO2*
- OR**
- b) A single circuit 50 Hz, 3-phase transmission line has the following parameters per km: R = 0.2 ohm, L = 1.3 mH and C = 0.01 μF. The voltage at the receiving end is 132 kV. If the line is open at the receiving end, determine the sending end voltage and efficiency using nominal-π method. *13,K3,CO2*

13. a) Derive an expression for sag calculation in a transmission line:
 (i) When the supports are at equal heights 7,K2,CO3
 (ii) When the supports are at unequal heights 6,K2,CO3

OR

- b) Discuss briefly on the following
 (i) Pin type insulator 7,K2,CO3
 (ii) Suspension type insulator 6,K2,CO3

14. a) What is meant by grading of cables? Discuss the methods in detail. 13,K2,CO4

OR

- b) Compute the capacitance of the cable per phase, charging current per phase and total charging KVAR of a 33kv 3 phase underground feeder, 4km long uses three single core cables. The diameter of each conductor is 2.5cm and an insulation thickness of 0.5 cm mm and the relative permittivity of 3. 13,K2,CO4

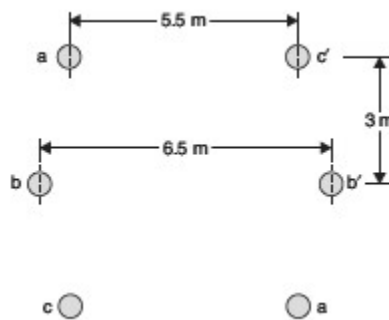
15. a) Explain the following system
 (i) DC distributor fed at one end 7,K2,CO5
 (ii) DC distributor fed at both ends 6,K2,CO5

OR

- b) Explain the different HVDC links. 13,K2,CO5

PART - C (1 × 15 = 15 Marks)

16. a) Determine the inductance of the double circuit line shown in below figure. The self GMD of the conductor is 0.0069 meter. 15,K3,CO1



OR

- b) Explain the following :
 (i) Neutral grounding 7,K3,CO5
 (ii) Resistance grounding 8,K3,CO5