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Question Paper Code: 54034

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2017

Fourth Semester

Electrical and Electronics Engineering

15UEE404 - TRANSMISSION AND DISTRIBUTION

(Regulation 2015)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

- In over head transmission systems, the conductors used are
 - Copper Conductors
 - ACSR Conductors
 - All Aluminium Conductors
 - Aluminium and Zinc alloy Conductors
- Which of the following distribution systems are more economical
 - DC System
 - Three phase 3 wire AC System
 - Single phase AC Systems
 - Three phase 4 wire AC System
- The corona is considerably affected by which of the following
 - Size of the conductor
 - Surface condition of the conductor
 - Shape of the conductor
 - All of the above
- If the supply frequency increases, then the skin effect is
 - Increases
 - Remains constant
 - Decreases
 - Initially decreases then increases
- When is the Ferranti effect on long over head lines experienced
 - The lines are lightly loaded
 - The lines are heavily loaded
 - The lines are fully loaded
 - The power factor is unity

6. If the power factor of the load decreases, the line losses
- (a) Increases (b) Decreases
(c) Remains same (d) Initially increases then decreases
7. The underground system cannot be operated above
- (a) 440 V (b) 11 kV (c) 33 kV (d) 66 kV
8. Which of the following methods is used for laying of underground cables?
- (a) Direct laying (b) Draw in system
(c) Solid system (d) All of the above
9. A conductor, due to sag between two supports, takes the form of
- (a) Semi-circle (b) Triangle
(c) Ellipse (d) Catenary
10. In a substation the following equipment is not installed
- (a) Exciters (b) Series capacitors
(c) Shunt reactors (d) Voltage transformers

PART - B (5 x 2 = 10 Marks)

11. Why all transmission and distribution systems are 3 phase systems.
12. What is Transposition?
13. Write the limitations of end condenser method?.
14. List the properties of Insulating materials.
15. What is the reason for the sag in the transmission line?

PART - C (5 x 16 = 80 Marks)

16. (a) Draw and explain the basic structure of the power system with relevant voltage levels. (16)
- Or
- (b) (i) Compare HVDC with EHVAC transmission system. (10)
(ii) Explain the advantages of STATCOM over Synchronous Condenser. (6)
17. (a) Derive an expression for capacitances of three phase un-symmetrically spaced transmission lines. (16)

Or

(b) Derive the equation and explain to get Inductance of symmetrical 3 phase over head transmission line. (16)

18. (a) Draw the Equivalent circuit and phasor diagram representation of Medium transmission line Nominal T representation and derive the ABCD representation of the same. (16)

Or

(b) Using rigorous method, derive expressions for sending end voltage and current for a long transmission line. (16)

19. (a) List the requirements of good cable and draw the constructional diagram of underground cable and explain the various parts. (16)

Or

(b) List the methods to improve the string efficiency and explain the same. (16)

20. (a) Develop the mathematical expression to determine the sag in transmission line when supports at equal levels. (16)

Or

(b) A transmission line has a span of 200 metres between level supports. The conductor has a cross-sectional area of 1.29 cm^2 , weighs 1170 kg/km and has a breaking stress of 4218 kb/cm^2 . Calculate the sag for a safety factor of 5, allowing a wind pressure of $122 \text{ kg per square metre}$ of projected area. What is the vertical sag. (16)
