A **Reg. No. :** | | | | | | | | | | |

Question Paper Code: 54304

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2019

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)

1. The voltage level of primary distribution is CO1- R

   (a) 132KV to 440KV (b) 6.6KV to 11KV (c) 11KV to 33KV (d) 400V to 11KV

2. Which of the following system is one way power transfer system CO1- R

   (a) Radial system (b) Ring main system

   (c) Interconnected system (d) None of the above

3. Factors affecting corona CO2- R

   (a) Line voltage (b) Line current (c) Phase voltage (d) All of the above.

4. Skin effect is not associated with the following one CO2- R

   (a) Frequency (b) Diameter of the wire (c) Shape of the wire (d) Size of the wire

5. What is the distance covered for short transmission line CO3- R

   (a) Less than 50 km (b) More than 50 km (c) 50 km to 150 km (d) Less than 60 km

6. Which of the following regulation is considered to be the best CO3- R

   (a) 35% (b) 5% (c) 70% (d) 95%

7. What is the forbidden level of Insulator ? CO4- R

   (a) Less than 3 eV (b) 0.7 eV (c) 0.3 eV (d) More than 4 eV

8. Guard ring transmission line CO4- R

(a) Improves power factor (b) Reduces earth capacitance of the lowest unit

(c) Reduces transmission losses (d) Improves regulation

9. Sag the conductor takes the following form CO5- R

(a) $S = W L^2 / 2 T$ (b) $W L / 8 D$ (c) $W L^2 / 8 T$ (d) $W L^2 / 8 D$

10. If sag in an overhead line increases tension in the line----------. CO5- R

(a) Increases (b) Decreases (c) Constant (d) Zero

PART – B (5 x 2= 10 Marks)

11. State the advantages of interconnected systems CO1- R

12. What is the need of Transposition? CO2- R

13. Draw the Phasor representation of Medium – Nominal T Transmission Line? CO3- R

14. Draw the equivalent circuit of a cable? CO4- R

15. What are the factors affecting sag in a transmission line CO5- R

PART – C (5 x 16= 80 Marks)

16. (a) (i) Discuss various types of HVDC links. Mentions any one HDVC link available in Indian with rating? CO1- U (8)

(ii) List out the main components of a HVDC system CO1- U (8)

Or

(b) A 2 wire DC distributor AB is 300 metres long. It is fed at point A . The various loads and their positions are given below. CO1- U (16)

At point	Distance from A in metres	Concentrated load in amperes
C	40	30
D	100	40
E	150	100
F	250	50

If the maximum permissible voltage drop is not to exceed 10 V , find the cross sectional area of the distributor. Take $\rho = 1.78 \times 10^{-8}$ Ω metres.

17. (a) (i) Build the expression for inductance of a three phase line with equilateral spacing CO2- U (8)

		(ii) Build the expression for inductance of a three phase Transposed conductors line	CO2- U	(8)
		Or		
	(b)	(i) Build the expression for capacitance of a three phase line with equilateral spacing	CO2- U	(8)
		(ii) Build the expression for capacitance of a three phase line with unequal spacing (Transposed conductors)	CO2- U	(8)
18.	(a)	A 3 phase,50 Hz 100 Km transmission line has the following constant Resistance / phase/ km = 0.1 Ω Reactance / phase / km = 0.2 Ω Capacitive Susceptance / phase / km = $0.04 * 10^{-4}$ mho If the line supplies a load of 10,000 KW at 0.8 p.f. lagging at 66 KV at the receiving end. Calculate the following by using nominal T method. (i) Sending end current (ii) Line Value of sending end voltage (iii) Sending end power factor (iv)Regulation and Transmission efficiency .	CO3- U	(16)
		Or		
	(b)	Explain the following methods for Medium Transmission lines (i) End Condenser method	CO3- U	(8)
		(ii) Nominal T method (or) middle condenser method	CO3- U	(8)
19.	(a)	The self capacitance of each unit in a string of three suspension insulators is C.The shunting capacitance of the connecting metal work of each insulator to earth is 0.15 C while for line is 0.1 C. Calculate (i) the voltage across each insulator as a percentage of the line voltage to earth and (ii) string efficiency.	CO4- U	(16)
		Or		
	(b)	Discuss briefly on the following Insulator:	CO4- U	(4)
		(i) Pin Insulator	CO4- U	(6)
		(ii) Suspension Insulator	CO4- U	(6)
		(iii) Strain Insulator		
20.	(a)	Derive the expressions for sag and conductor length under bad weather conditions. Assume Shape of overhead line is a parabola.	CO5- U	(16)
		Or		

(b) Explain the following concepts with the help of diagram.

(i) Peterson coil grounding	CO5- U	(8)
(ii) Reactance grounding	CO5- U	(8)