

A

Reg. No. :

--	--	--	--	--	--	--	--	--	--	--

Question Paper Code: 54304

B.E. / B.Tech. DEGREE EXAMINATION, MAY 2018

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. A conductor which connects the substation to the area where power is to be distributed is CO1- R
(a) Distributor (b) Service main (c) Ring main (d) Feeder

3. Factors affecting corona CO2- R
(a) Line voltage (b) Line current (c) Phase voltage (d) All of the above

4. The skin effect is less for CO2- R
(a) Bundled conductor l (b) Stranded conductor
(c) Solid conduction (d) None of the above

PART – C (5 x 16= 80Marks)

16. (a) (i) Discuss various types of HVDC links. Mentions any one HDVC link available in India with the design ratings. CO1- U (8)
- (ii) Explain the main components of a HVDC system. CO1- U (8)
- Or
- (b) (i) Explain the structure of electric power system with a neat Diagram. CO1- U (8)
- (ii) Explain the types of AC distribution system in detail. CO1- U (8)
17. (a) (i) Derive an expression for the loop inductance of a single phase transmission line. CO2- Ana (8)
- (ii) Derive an expression for the capacitance of a single phase overhead transmission line. CO2- Ana (8)
- Or
- (b) (i) A single phase transmission line has 2 parallel conductors, each of 1.2cm diameter and 2.5 meters apart. Calculate the loop inductance per KM length of the line if the material of conductor is
 (i) copper
 (ii) steel with relative permeability of 200 . CO2 -App (8)
- (ii) Derive an expression for inductance of a 3-phase transmission line with unsymmetrical Spacing. CO2 -App (8)
18. (a) A 3 phase transmission line, 160km long transmits a load of 90 MW at 0.80 pf lagging. The line voltage at the receiving end is 230 KV. The constants of the line are $A= D = 0.9785 \angle 0.3^\circ$, $B=85.2 \angle 77.4^\circ$, $C = 0.000503 \angle 90.1^\circ$ Calculate the L
 (i) Sending end voltage and power angle. (4)
- (ii) The maximum power, which the line can deliver with the above values of sending end and receiving end voltages. (4)
- (iii) Sending end power and power factor. (4)
- (iv) Line losses. (4)

Or

- (b) (i) Explain the classification of lines based on their length of Transmission. CO3- U (8)
- (ii) Draw the equivalent circuit equivalent circuit of long line and Derive the expression for parameters of this circuit in terms of line parameters. CO3- U (8)
19. (a) Explain any two methods of grading of cables with necessary diagrams. CO4-U (16)

Or

- (b) Explain the various methods of improving string efficiency in suspension insulators. CO4- U (16)
20. (a) (i) Derive an expression for sag of a line supported between two supports of unequal height. CO5- Ana (8)
- (ii) A transmission line has a span of 150m between level supports. The conductor has a cross sectional area of 2cm^2 . the tension in the conductor is 2000kg. if the specific gravity of the conductor material is 9.9gm/cm^3 and wind pressure is 1.5 kg/m length. Calculate the sag. What is the vertical sag? CO5- App (8)

Or

- (b) Explain the following in detail CO5- U (16)
- (i) Neutral grounding
- (ii) Resistance grounding