

Code: EE5T5

**III B.Tech - I Semester – Regular/ Supplementary Examinations
October 2017**

**TRANSMISSION AND DISTRIBUTION
(ELECTRICAL & ELECTRONICS ENGINEERING)**

Duration: 3 hours

Max. Marks: 70

PART – A

Answer *all* the questions. All questions carry equal marks

11 x 2 = 22 M

1.

- a) What is transposition of conductors?
- b) Define unsymmetrical and symmetrical spacing.
- c) Classify overhead transmission lines.
- d) Define regulation of power transmission line.
- e) List out factors affecting corona.
- f) What is stringing chart?
- g) What is Refraction coefficient?
- h) What do you understand by distortion in a transmission line?
- i) What is a radial distributor?
- j) Classify different types of distribution system.
- k) What is the function of sheath in a cable?

PART – B

Answer any *THREE* questions. All questions carry equal marks.

3 x 16 = 48 M

2. a) Derive the expression for inductance of a 3-phase double circuit line. 8 M
- b) Calculate the capacitance of a three-phase, three-wire system with triangular configuration with sides $D_{12} = 3.0\text{m}$, $D_{23} = 4.0\text{ m}$ and $D_{31} = 5.0\text{ m}$. The diameter of the conductor is 1.9 cm. 8 M
- 3.a) Explain skin effect, proximity effect and corona loss. 8 M
- b) A single-phase, 11 kV line with a length of 15 km is to transmit 500 kVA. The inductive reactance of the line is $0.6\ \Omega$ per km and the resistance is $0.25\ \Omega$ per km. Calculate the efficiency and regulation for a p.f of 0.75 lead. 8 M
- 4.a) Derive the expression for string efficiency of a string of 3-insulators. 8 M
- b) A transmission line has a span of 120 m between level supports. The conductor has a cross-sectional area of 2.1cm^2 . The tension in the conductor is 1500 kg. If the specific gravity of the conductor material is 8.9 g/cm^3 and

- wind pressure is 1.8 kg/m length, calculate the sag. 8 M
- 5.a) Discuss the methodology for analyzing the behavior of travelling waves in power system. 8 M
- b) Discuss the behavior of a travelling wave when it reaches
- i) short circuited
 - ii) open circuited transmission lines. 8 M
- 6.a) A 2-wire, DC distributor 700m long is loaded uniformly at the rate of 0.5 A/m. If the voltage drop is not to exceed 4V, calculate the area of cross section of each conductor required when the distributor is fed at one end. Take resistivity of conductor as $1.8 \times 10^{-8} \Omega\text{-m}$. 8 M
- b) Compare between underground cables and Over head distribution systems. 8 M