24141

B.Tech. 4th Semester (EEE) Examination, May–2016

TRANSMISSION AND DISTRIBUTION

Paper–EE-212-F

Time allowed : 3 hours] *[Maximum marks : 100*

Note : ***Question No. 1 is compulsory*** *and attempt* ***one*** *question from each section.*

1. (a) List out the advantages of high voltage A.C. transmission. 4×5=20

   (b) What are the various methods of earthing in substations ?

   (c) What are the advantages of string insulators ?

   (d) What is skin effect ? On what factor does it depend ?

Section–A

2. Explain different types of distribution system with the help of neat sketches. 20

3. Derive an expression for sag of a line supported between two supports of the same height. 20

Section–B

4. A 3 ϕ, 50Hz 1000 Km long transmission line has the following line constants per phase per km uniformly distributed

   $r = 0.22\ \Omega$, $x = 0.45\ \Omega$, $g = 4\times10^{-9}$s and $b = 2.53 \times 10^{-6}$s

   Determine the auxiliary constants (i) by using convergent series of complex angles (iii) by using convergent series of real angles. 20

5. Derive an expression for capacitance of 3 ϕ unsymmetrically spaced transmission line.

Section–C

6. (a) Obtain an expression for the sag of a transmission line supported by towers of different heights at the ends.

   (b) What electrical and mechanical characteristics are required for a good insulator for use in HV transmission line.

7. Draw with neat sketches and explanation of pin and suspension type insulators. Compare their merits and demerits.

Section–D

8. (a) Derive the general construction of an underground cable with a neat sketch.

   (b) State the classification of cables and discuss their general construction.

9. What is corona and what are the factors affecting corona loss ? Discuss them briefly. What are the methods of reducing corona loss ? Discuss the advantages and disadvantages of corona.