

(DEE 315)

B.Tech. DEGREE EXAMINATION, MAY - 2015

(Examination at the end of Third Year)

ELECTRICALS AND ELECTRONICS ENGINEERING

Paper - V : Transmission & Distribution

Time : 3 Hours

Maximum Marks : 75

Answer question No.1 compulsory

(15)

Answer any ONE question from each unit

(4 × 15 = 60)

- 1) a) Define GMD.
- b) Write advantages of bundled conductors.
- c) What is Skin Effect?
- d) What is Transposition?
- e) Classify Transmission lines.
- f) Draw pie equivalent circuit of medium transmission line.
- g) Define sag.
- h) What is sag template?
- i) What is Kelvin's Law?
- j) Draw Ac 3 phase 3 wire system.
- k) What is the difference between indoor and outdoor substation.
- l) What is isolator?
- m) What is insulator?

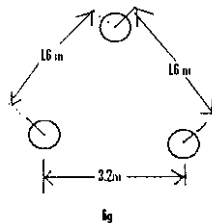
- n) What is Arcing horn?
- o) What is capacitance grading?

UNIT – I

- 2) a) Derive the expression for the inductance of a 3- ϕ double circuit flat vertical spacing configuration.
- b) A three-phase overhead transmission line has its conductors arranged at the corners of an equilateral triangle of 2m side. Calculate the capacitance of each line conductor per km. Given that the diameter of the conductor is 1.25 cm.

OR

- 3) a) Find the expression for inductance of a two wire 1- ϕ transmission line.
- b) Determine the inductance of a three phase line operating at 50 Hz and conductors arranged as follows : the conductor diameter is 1 cm.



UNIT - II

- 4) a) Derive the expression for A, B, C, D parameters of nominal- π medium length transmission line by using its phasor diagram.
- b) Input to a single-phase short length line is 2000kw at 0.8 lagging power factor. The line has a series impedance of $(0.4 + j 0.4)\Omega$. If the load voltage is 3KV, find the load and receiving end power factor. Also find the supply voltage.

OR

- 5) a) Explain the concept and phenomenon of corona.
- b) Determine the corona characteristics of a 3-phase line 160km long, conductor diameter 1.036cm, 2.44 m delta spacing, air temperature 26.67°C, altitude 2440m, corresponding to an approximate barometric pressure of 73.15cm of mercury, operating voltage 110kv at 50Hz. Assume data if required.

UNIT - III

- 6) a) Briefly discuss different types of distribution systems.
b) Compare AC and DC distribution systems

OR

- 7) a) Explain the various factors to be considered to decide the ideal location of substation.
b) Explain how to decide the rating of a distribution a substation.

UNIT - IV

- 8) a) Explain various types of insulators with neat diagrams and compare them?
b) A three phase overhead lines is suspended by a suspension type insulator, which consists of three units. The potential across top unit and middle unit are 12kv and 18kv Respectively. Calculate :
i) The ratio of capacitance between pin and earth to the self capacitance of each unit
ii) The line voltage and
iii) String efficiency.

OR

- 9) a) Distinguish between the advantages & disadvantages of underground cable over overhead lines.
b) The maximum and minimum stresses in the dielectric of a single core cable are 40kv/cm (r.m.s) and 10kv/cm (r.m.s) respectively. If the conductor diameter is 1cm, find: i) Thickness of insulation & ii) Operating voltage.

