

B.Tech Sem – V (2007 Course) (Electrical Engg.) : WINTER - 2018
SUBJECT: TRANSMISSION AND DISTRIBUTION OF ELECTRICAL ENERGY

Day : Thursday
Date : 29/11/2018

W-2018-2805

Time : 02.30 PM TO 05.30 PM
Max. Marks: 80

N. B. :

- 1) **Q.No.1 and Q. No.5 are COMPULSORY.** Out of the remaining attempt ANY **TWO** questions from each sections.
- 2) Figures to the right indicate **FULL** marks.
- 3) Answer the both sections should be written in the **SEPARATE** answer books.
- 4) Assume suitable data if necessary.

SECTION - I

- Q1.** a) What are the different types of supports used in case of transmission / distribution of electrical energy? **(05)**
- b) With phasor diagram explain the Ferranti effect of transmission line. **(05)**
- c) Explain the vibration and dampers used in transmission line. **(04)**
- Q.2** a) Differentiate between pin insulator and suspension insulators. **(07)**
- b) A string insulator has 5 units each rated for 11 kV. Find the maximum line voltage on which it can be operated safely. The mutual capacitance of unit is 10 times the capacitance between pin to earth. **(06)**
- Q.3** a) Describe the step by process of calculation of inductance of single phase transmission line. **(07)**
- b) Three conductors of a three phase line are arranged at the corners of a triangle of sides of 3 m, 3.5m and 4.2 m. Calculate the inductance per km line when the conductors are regularly transposed. Consider the diameter of each conductor to be 1.5 cm. **(06)**
- Q.4** a) Transmission line conductor has an effective diameter of 2 cm and weight 0.9 kg/m. the ultimate strength is 9000kg. The distance between two adjacent support is 300 m. if the conductor has ice coating of radial thickness is 1.27 cm and subjected to wind pressure of 3.6 gm / cm. sq. of projected area. Calculate the sag if weight of 1 cc of ice is 0.91 gm and factor of safety is 2. **(07)**
- b) What are the advantage and disadvantage of corona effect? **(06)**

SECTION - II

- Q5.** a) Draw the cut section of H type of cable and explain the function of each part. **(05)**
- b) How distribution systems are classified? Also describe their advantages and disadvantages. **(05)**
- c) What parameters are considered while selecting the site for substation? **(04)**

P.T.O.

- Q.6** a) What do you mean by capacitance grading? Also derive its equation. (07)
- b) Describe the various causes of failure of underground cable. (06)
- Q.7** a) Describe the procedure of calculation of voltage drop of ring distributor fed at various points and having distribution of load at various points. Explain with example. (07)
- b) What are the factors to be considered while designing the feeder? (06)
- Q.8** a) What are the various electrical equipments used in case substations? Explain in brief. (07)
- b) Draw the single line diagram of 33 kV / 11 kV substations and explain the same. (06)

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