Exam.Code:0934
Sub. Code: 33758

2015

B.E. (Electrical and Electronics Engineering)

Fourth Semester

PC-EE-402: Power System - I

Time allowed: 3 Hours Max. Marks: 50

NOTE: Attempt five questions in all, including Question No. I which is compulsory and selecting two questions from each Part. Assume any missing data.

x-x-x

1. (a) Draw layout of power supply network.
   (b) Advantages of bundled conductors.
   (c) Advantages of pu representation of quantities.
   (d) Name different layers of UGC with diagram.
   (e) What is transposition of power lines?

(5x2)

PART A

2. (a) Describe with a neat sketch, construction of 3-core belted cable. Also discuss its limitations.
   (b) Explain grading of UGC. Explain its different methods. (5,5)

3. Determine voltage across each disc of suspension insulator as percentage of line voltage to earth. Self and capacitance to ground of each disc is C and 0.2 C respectively. Capacitance between link pin and guard ring is 0.1C. If capacitance to the line of lower link pin were increased to 0.3C by means of guard ring, find redistribution of voltage. Also, find string efficiency in each case. (10)

4. (a) Explain 3-phase sudden short circuit condition of an alternator what is RRRV?
   (b) Explain reflection of travelling waves. Derive formula for reflection coefficient. (5, 5)

PART-B

5. (a) Explain the effect of earth on capacitance of conductors.

   (b) Derive expression for capacitance of double circuit line with hexagonal spacing.(5,5)

6. Drive an expression for flux linkages of one conductor in a group of n-conductors carrying currents whose sum is zero. Hence, derive an expression for inductance of composite conductors of 1-phase line consisting of m-strands in one conductor and n-strands in the other conductor. (10)

7. (a) A short 3-phase transmission line has a series line impedance per phase of (20+j50)Ω. The line delivers a load of 50 MW at 0.7pf lagging. Determine regulation of the line and ABCD parameters. If same load is delivered at 0.7 pf lead, determine regulation of line. System voltage is 220kV.

   (b) Discuss classification of transmission lines. (7,3)

x-x-x