Registration No. : | | | | | | | | | | |

Total number of printed pages – 2

B. Tech

PCEE 4401

Seventh Semester Back Examination – 2014

ELECTRICAL POWER TRANSMISSION AND DISTRIBUTION

BRANCH : EEE

QUESTION CODE : L 147

Full Marks – 70

Time : 3 Hours

*Answer Question No. **1** which is compulsory and any **five** from the rest.*
The figures in the right-hand margin indicate marks.

1. Answer the following questions : 2×10

   (a) Why high voltage is preferred for power transmission ? Explain.

   (b) What are the various components of the power supply system ?

   (c) List the factors that governing the capacitance of the transmission line.

   (d) What are the causes of voltage drop and line loss in a transmission line ?

   (e) Define Skin effect. On what factors does the skin effect depends ?

   (f) For controlling reactive power what adjustment should be done in the transformer present in the system ?

   (g) How are cables classified based on operating voltage ?

   (h) What are the main advantages of suspension type insulators over pin type insulators ?

   (i) Draw the phasor representation of short transmission line defining all the terms clearly.

   (j) List the different types of distribution system based on the connection.

2. (a) What are the different methods to improve the string efficiency of an insulator ? 5

(b) A short 3-phase transmission line with an impedance of (6+j8) ohms per phase has sending end and reciving end voltgaesof 120kV and 110kV respectively for some receiving end load at a p.f of 0.9 lagging. Determine the power output and sending end power factor. 5

3. (a) Derive an expression for inductance of a single phase over head line. 5

(b) What is an equivalent Π circuit of long line ? Derive expression for parameters of this circuit in terms of line parameters. 5

4. An insulator string for 66kV line has 4 discs. The shunt capacitance each joint and metal work is 10% of capacitance of each disc. Find the voltage across each disc and string efficiency. 10

5. (a) Explain the ferranti effect with phasor diagram and its causes 5

(b) Compare EHVAC and HVDC transmission system. 5

6. (a) Why the concept of self GMD is not applicable for the capacitance ? 5

(b) What is corona loss ? How do you determine the loss ? 5

7. A three phase 5km long transmission line, having resistance of 0.5 Ω/km and inductance of 1.76mH/km is delivering power at 0.8 pf lagging. The receiving end voltage is 32kV. If the supply end voltage is 33kV, 50Hz, find the line current, regulation, and efficiency of the transmission line. 10

8. Write short notes on any **two** of the following: 5×2

(a) Radial System

(b) Neutral grounding

(c) ABCD parameter

(d) Transposition of conductors.