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BIEE-003

B.Tech. – VIEP – ELECTRICAL ENGINEERING (BTELVI)

00076 **Term-End Examination**

June, 2014

BIEE-003 : POWER SYSTEM – I

Time : 3 hours *Maximum Marks : 70*

Note : *Attempt any **five** questions. All questions carry equal marks.*

1. (a) Derive an expression for the inductance per phase of 3ϕ line with unsymmetrical spacing. 7

(b) What is skin effect and proximity effect ? 7

2. (a) Derive the A, B, C, D constants of a long transmission line from the basic principle ? 7

(b) What is meant by corona ? How would you reduce power loss due to corona ? 7

3. (a) In a string insulator having 5 units, the self-capacitance of insulator units is 6 times that between string and earth. Obtain the potential distribution across each unit in string as % of potential of conductor w.r.t. earth. 7

(b) What do you mean by string efficiency ? 7

4. (a) What are the limitations of Kelvin's law ? 7

(b) A 32 kV single core cable has a conductor diameter of 0·9 cm and a sheath of inside diameter 3·7 cm. Find the maximum and minimum stress in the insulation. 7

5. (a) Compare the advantages of using ac transmission system over dc system. 7

(b) What are the main parameters of overhead transmission line ? 7

6. (a) What is Ferranti Effect ? 7

(b) Name the various materials that are commonly used for overhead line insulator. 7

7. (a) Derive the A, B, C, D constants for the transmission line represented for nominal-T section. 7

(b) Write a short note on grading of cables. 7