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

00696   **Term-End Examination**

June, 2015

BIEE-003 : POWER SYSTEM – I

Time : 3 hours   *Maximum Marks : 70*

Note : *Attempt any **seven** questions in all. All questions carry equal marks.*

1. (a)   Determine the Inductance of the double circuit line shown in Figure 1. The self GMD of conductor is 0·0069 m.
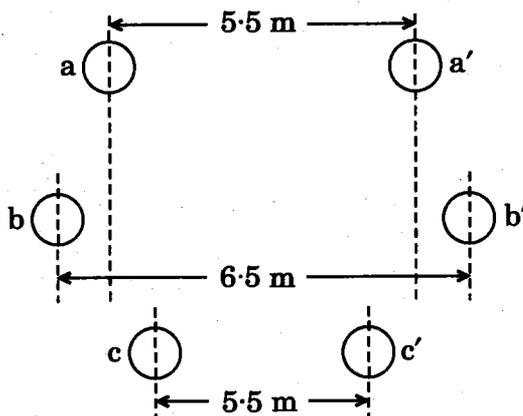

Figure 1

(b) What are bundled conductors ? Briefly describe the advantages of bundled conductors. *2×5=10*

2. (a) Calculate the A, B, C and D parameters for medium transmission line for nominal π model.

   (b) List and explain the methods of Reducing corona loss. *2×5=10*

3. (a) List the types of Insulators used for overhead lines. Give brief description of any one.

   (b) Name the different methods of prevention of vibrations. Explain any one of them with a neat sketch. *2×5=10*

4. Derive the formula of voltage distribution across each unit of a string suspension insulator consisting of four units. Also define the string efficiency. *10*

5. Describe with a neat sketch the construction of a 3-core belted type cable. Discuss the limitations of such a cable. *10*

6. Derive the formula of capacitance of a 2-wire line, having radius of conductor 'r' and distance between them as 'D'. *10*

7. Explain the modified Kelvin's law with graphical representation and also describe the limitations. *10*

8. Explain the classification of lines based on their length of transmission. Also explain the Ferranti effect with a phasor diagram. *10*

9. What is a sag template ? Explain how this is useful for location of towers and stringing of power conductors. *10*

10. Explain the various methods of grading of cables and derive the formula for any one of them. *10*

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