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No. of Printed Pages : 3

**BIEE-003**

**B.Tech. - VIEP - ELECTRICAL ENGINEERING  
(BTELVI)**

**Term-End Examination**

**December, 2015**

**BIEE-003 : POWER SYSTEM - I**

*Time : 3 hours*

*Maximum Marks : 70*

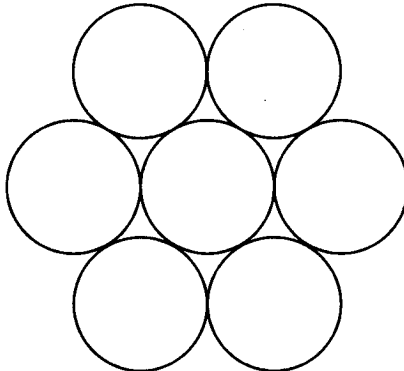
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*Note : Attempt **seven** questions in all. All questions carry equal marks.*

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1. A conductor consists of seven identical strands each having a radius of 1 cm. Calculate the Self GMD of the conductor. 10



2. What are the bundled conductors ? Discuss their advantages. Also explain the 'Skin effect' and 'Proximity effect' referred to overhead lines. 10
3. Calculate the A, B, C and D parameters for medium transmission line for nominal T-model. 10
4. Explain the Ferranti effect with the help of a phasor diagram. Also explain how the surge impedance loading affects the Ferranti effect. 10
5. What are the main causes of dielectric loss ? Also derive the formula for dielectric power loss. 10
6. Calculate the sag for a span of 200 m, if the ultimate tensile strength of conductor is 8000 kgf. The weight of the conductor is 800 kgf/km. Allow factor of safety of two. 10
7. Draw the equivalent circuit and phasor diagram of short transmission line and calculate the voltage regulation of short transmission line. 10
8. (a) Explain why the voltage distribution along a string of suspension insulators is normally non-uniform.  
(b) Define string efficiency. What is the necessity of having a high string efficiency ? How can it be achieved ?  $2 \times 5 = 10$
9. Derive the expression for the inductance of a symmetrical three-phase line. What is meant by the term equivalent spacing ? State its significance. 10

**10. (a)** Draw and explain the single-line diagram of a power system.

**(b)** Write short notes on the following :

(i) Spacing of conductors

(ii) Types of towers used for overhead line

*2×5=10*

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