BTCSVI / BTECVI / BTELVI

Term-End Examination

June, 2018

00963

BIEE-001 : BASICS OF ELECTRICAL ENGINEERING

Time : 3 hours   *Maximum Marks : 70*

Note : *Attempt any **seven** questions in all. All questions carry equal marks. Use of scientific calculator is allowed.*

1. State and explain "Superposition Theorem". What are the limitations and significances of this theorem ?
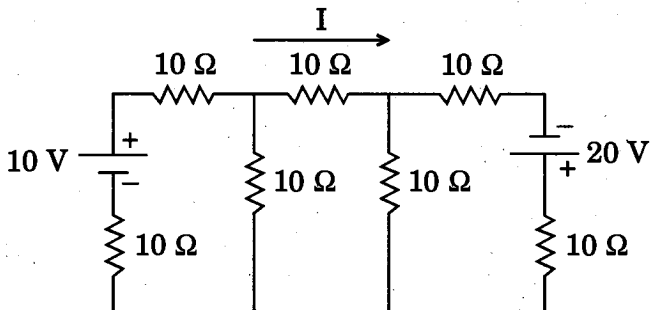
   Consider the circuit shown in Figure 1.

   Figure 1

   Find I in Figure 1 by Superposition Theorem.   *10*

2. Discuss the constructional details and working principle of "Lead Acid Battery". What are the advantages and disadvantages of lead acid battery over normal battery ?   *10*

3. State and explain "Faraday's Laws of Electromagnetic Induction". What are the limitations and significances of these laws ?   *10*

4. Explain the following :   *5+5*

(a) Lenz's Law

(b) Fleming's Right and Left Hand Rules

5. State and explain "Kirchhoff's Current Law" and "Kirchhoff's Voltage Law". Also mention their limitations.   *10*

6. Derive an expression for the following :   *5+5*

(a) Conversion of Star to Delta.

(b) Conversion of Delta to Star.

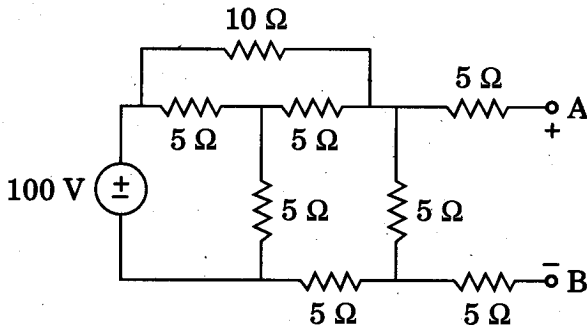**7.** State and explain "Norton's Theorem". Consider the circuit shown in Figure 2. *10*

Figure 2

(a) Determine the Thevenin equivalent circuit across the AB terminals of Figure 2.

(b) Also determine the Norton's equivalent circuit from part (a).

8. Define Power Factor. What are the drawbacks of low power factor ? Also discuss the importance of power factor in the power system. *10*

9. What are the advantages of three-phase system over single-phase system ? What do you understand by balanced and unbalanced three-phase load ? *10*

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