B.Tech. ELECTRONICS ENGINEERING - III (BTCVI/BTECVI/BTELVI)

Term-End Examination

December, 2012

BIEE-001 : BASICS OF ELECTRICAL ENGINEERING

Time : 3 hours   *Maximum Marks : 70*

Note :   *Attempt **any seven** questions. All questions carry **equal** marks. Use of scientific calculator is allowed. All the questions are to be answered in English Language only.*

1. (a) Explain star-delta transformation and vice-versa.   **2x5=10**

   (b) Find the voltage across 6 Ω resistor for the circuit shown in figure (1).
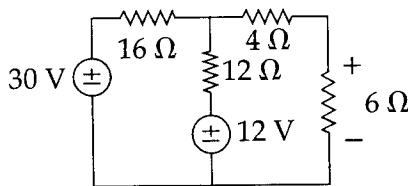

Figure (1)

2. (a) State and explain Thevenin's Theorem and write its limitations and applications.   **2x5=10**

(b) Find the Norton equivalent circuit of the circuit shown in figure (2) at terminal a – b.
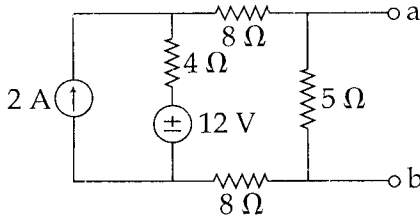

Figure - (2)

3. (a) What is the difference between primary and secondary cell ?   **2x5=10**

(b) Explain the construction and working of silver oxide cell.

4. (a) Draw and explain hysteresis loop. What is its significance ?   **2x5=10**

(b) Derive an expression for the force experienced by current carrying conductor placed in a uniform magnetic field.

5. (a) Explain the self inductance and mutual inductance.   **2x5=10**

(b) State and explain Faraday's law of electromagnetic induction.

6. Show that the condition for resonance in a parallel   **10**
R-L-C circuit is same as that in a series R-L-C circuit. State the application of series as well as parallel resonance.

7. The following figure (3) shows a series - parallel **10** circuit. Find :

   (a) Admittance of each parallel branch

   (b) Total circuit impedance

   (c) Supply current and power factor

   (d) Total power supplied by the source
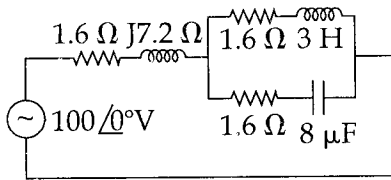

Fig. (3)

8. A balanced delta-connected load of impedance **10** $(16 + J12)$ Ω per phase is connected to a 3-phase 400 V supply. Find the phase current, line current, power factor, reactive power and total power.

9. Explain two wattmeter method to determine **10** power in three-phase system.

10. Write short notes on *any two* of the following : **2x5=10**

   (a) Superposition Theorem

   (b) Polyphase system

   (c) Difference between DC and AC.

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