I B. Tech I Sem Supple & II Sem Regular Examinations, June, 2015
Basic Electrical Engineering
(Common to EEE, ECE, CSE, BME, IT, CE & ME)

Time: 3 hours   **Max Marks: 70**

PART – A
Answer ALL questions. All questions carry equal marks
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10 * 2 Marks = 20 Marks

1). **a**   Explain Ohm's Law.   **[2]**

   b   Give the relations of Star to Delta Transformation.   **[2]**

   c   If 'n' capacitors are connected in parallel, obtain the expression for $C_{eq.}$ **[2]**

   d   With a phasor representation explain the concept of Lagging Current.   **[2]**

   e   A current of $i=5Sin(100\pi t +30^o)$ flows through an impedance of $(6+j8)\Omega$. Determine the Apparent Power and Power Factor.   **[2]**

   f   Define the terms Form factor and peak factor and give their values for a Sinusoidal Signal.   **[2]**

   g   State Thevinin's and Norton's Theorem.   **[2]**

   h   Define the terms Bandwidth and Quality Factor.   **[2]**

   i   Give the classification of DC Motors.   **[2]**

   j   What are the different types of Transformers? Explain.   **[2]**

PART – B
Answer any FIVE questions. All questions carry equal marks
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5 * 10 Marks = 50 Marks

2.   a)   Explain the Kirchoffs Laws with example.   **[10]**

     b)   What is the value of the unknown resistor R in the circuit shown in figure 1 below if the voltage drop across the 500Ω resistor is 2.5V.
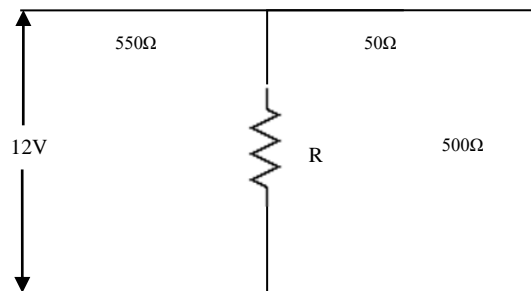

Figure 1

3.   a)   An RLC circuit has 100Ω, 1mH and 0.5µF connected in series. If the circuit is excited by a supply of V=200 sin (100πt), determine the impedance of the circuit and current flowing in the circuit.   **[10]**

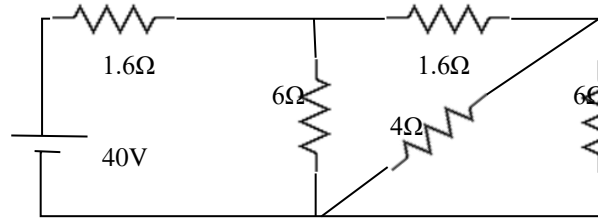**3.** b) Find the current through the 4Ω resistor for the circuit in figure 2 below.

Figure 2

4. a) Explain the concept of Generation of a Sinosoidal Voltage. **[10]**

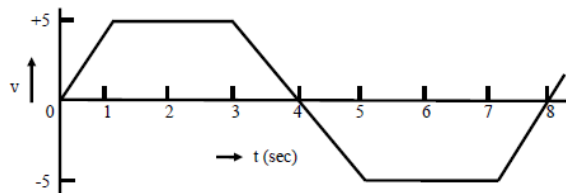b) Obtain the expression for the RMS and Average values of the alternating signal given in the figure 3 below.

Figure 3

5. a) Explain the concept of Resonance and obtain the expression for the Resonant **[10]** Frequency of a parallel RLC circuit.

b) Explain the procedure for circuit analysis using nodal analysis with an example.

6. With a neat sketch explain the construction and working of a single phase **[10]** transformer and derive the expression for the induced emf.

7. a) Deduce the current I supplied by the battery in the circuit shown in figure 4 **[10]** below.
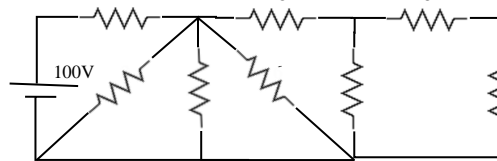

Figure 4

b) Define terms Apparent Power, Active Power, Reactive Power and Power factor.

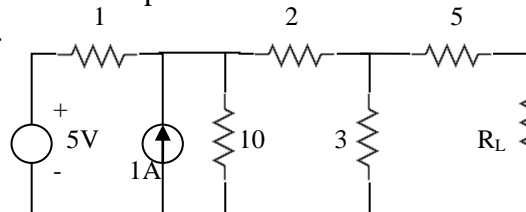**8.** a) Calculate the maximum power delivered to load resistor R_L of the circuit in **[10]** figure 5 below.

Figure 5

b) List out the various applications of DC Motors.

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