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BIEE-001

BTCSVI / BTECVI / BTELVI

Term-End Examination

00283 **December, 2016**

BIEE-001 : BASICS OF ELECTRICAL ENGINEERING

Time : 3 hours *Maximum Marks : 70*

Note : *Answer **five** questions in all. All questions carry equal marks. Use of scientific calculator is allowed.*

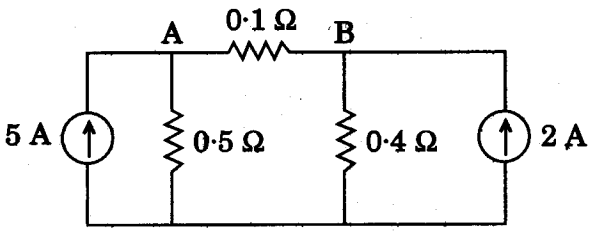
1. (a) Discuss the effect of temperature on resistance. Mention the materials having negative temperature coefficients. What is meant by negative temperature coefficient ? 7

(b) Explain the advantages of polyphase system over single phase system. 7

2. (a) Explain the advantages and disadvantages of Lead acid battery and Nickel cadmium battery. 7

(b) Explain the construction and working of a lead acid battery. 7

3. (a) Determine the current through the 0·1 Ω resistor in the following figure, using Thevenin's theorem : 7



(b) State Kirchhoff's Current Law (KCL) and Kirchhoff's Voltage Law (KVL). 7

4. (a) Define the terms MMF, magnetic flux and magnetic reluctance and establish the relation which holds between these quantities for a magnetic circuit. 7

(b) Estimate the number of ampere turns necessary to produce a flux of 1,00,000 lines around an iron ring of 6 cm^2 cross-section and 20 cm mean diameter having an air-gap 2 mm wide across it. Permeability of iron may be taken as 1200. Neglect the leakage flux outside the 2 mm air-gap. 7

5. (a) Write a short note on star-delta connections in a 3-phase supply and their inter-relationship. 7

(b) Explain the Fleming's Right and Left hand rules. 7

6. (a) Explain the following terms as applied to A.C. circuits : 7

(i) Impedance

(ii) Power factor

(iii) Phase angle

(b) Derive the relationship between the voltage and current for a purely capacitive circuit. Also show that the average power consumed by the circuit is zero. 7

7. Write short notes on any ***two*** of the following : *7+7=14*

(a) Rise and decay of current in RC circuit

(b) Generation of 3-phase voltages

(c) Resonance in series RLC circuit

(d) Series and parallel connections of batteries