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OIEE-001

B.Tech.
DECVI / DELVI / DCSVI / ACECVI / ACELVI / ACCSVI

00846 **Term-End Examination**

June, 2015

OIEE-001 : BASICS OF ELECTRICAL ENGINEERING

Time : 2 hours *Maximum Marks : 70*

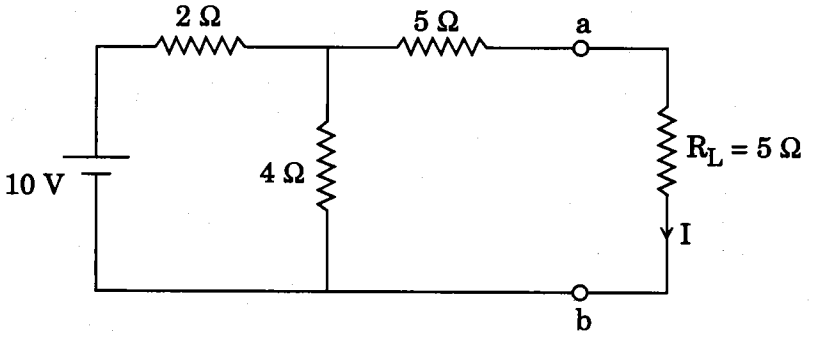
Note : *Attempt any **five** questions. All questions carry equal marks.*

1. (a) A coil is made-up of copper wire. At a temperature of 20°C, the resistance of the coil is 400 Ω. Calculate the resistance of the coil at a temperature of 80°C. The temperature co-efficient of copper is 0·0038Ω/°C at 0°C. 7

(b) State Kirchhoff's current and voltage laws. Explain them with suitable circuit. 7

2. (a) State and prove Superposition theorem. 7

(b) Find the current in $R_L = 5\ \Omega$ resistor using Thevenin's Theorem. 7



3. (a) Explain the various methods of charging batteries. 7

(b) Describe the construction of a Lead Acid battery. Write the care and maintenance of a lead acid battery. 7

4. (a) Derive the expression for a force between two parallel current carrying conductors. 7

(b) Explain the following terms : 7

(i) MMF

(ii) Reluctance

(iii) Flux density

5. (a) State and explain Faraday's Law of Electromagnetic Induction. 7

(b) Define co-efficient of a coupling and calculate it for two coils having self-inductances of 60 mH and 80 mH. The mutual inductance between them is 40 mH. 7

6. (a) Explain the following terms pertaining to ac waves : 7

(i) Time period

(ii) Form factor

(iii) Crest factor

(b) Define the Average value of a sinusoidal voltage and derive its value. 7

7. (a) A coil of resistance 10 Ω and inductance 0·1 H is connected in series with a capacitor of 150 μF across 200 V, 50 Hz ac supply. Find the current and power factor of the circuit. 7

(b) Explain resonance in R-L-C series circuit. 7

8. (a) What are the advantages of 3-phase system over single-phase system ? 7

(b) Derive the relation between line voltage and phase voltage for 3-phase four-wire system. 7