No. of Printed Pages : 3

OIEE-001

DECVI / DELVI / DCSVI / ACECVI / ACELVI / ACCSVI

Term-End Examination

00396

June, 2016

OIEE-001 : BASICS OF ELECTRICAL ENGINEERING

Time : 2 hours *Maximum Marks : 70*

Note : *Attempt any **five** questions. Question no. **1** is **compulsory**.*

*Answer **all** the following questions :* *7×2=14*

1. (a) The specific resistance depends upon the nature of the material of the conductor only. [T/F]

(b) The direction of current in an a.c. circuit is always in one direction. [T/F]

(c) In a three-phase system, the emfs are 30° apart. [T/F]

(d) The energy stored in an inductor is given by $\frac{1}{2} LI^2$ Joules. [T/F]

(e) The internal resistance of an ideal voltage source is infinite. [T/F]

(f) The power factor of a purely inductive circuit is infinite. [T/F]

(g) Phase angle between voltage and current is zero for a purely resistive circuit. [T/F]

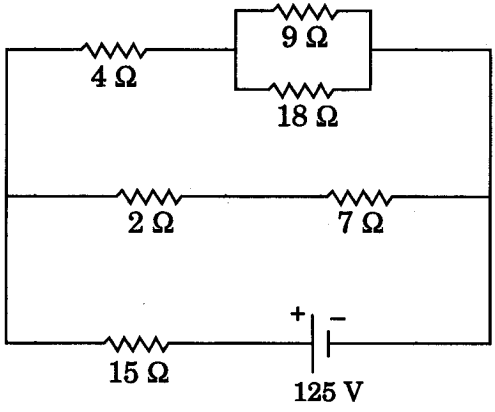
2. (a) A coil consisting of 2,000 turns of copper wire has cross-sectional area of 0·8 mm^2. The mean length per turn is 20 cm and the resistivity of copper is 2×10^{-8} Ωm at normal working temperature. Calculate (i) the resistance of the coil, and (ii) the power dissipated, when the coil is connected across a 110 V d.c. supply. *8*

(b) State and explain Ohm's law. What are its limitations ? *6*

3. (a) Explain the construction, working and application of any type of cell. *8*

(b) Compare Primary and Secondary cells. *6*

4. (a) Find (i) the current in the 15 Ω resistor, (ii) voltage across the 18 Ω resistor, and (iii) the power dissipated in the 7 Ω resistor of the circuit given below : *8*



(b) State and explain the following : 6

(i) KCL

(ii) KVL

5. (a) Deduce the analogy between magnetic and electric circuits. What are the major differences between them ? 8

(b) Write a short note on Lenz's law. 6

6. (a) Explain the following terms as applied to an a.c. circuit : 6

(i) Admittance

(ii) Conductance

(iii) Susceptance

(b) A coil takes 2·5 A, when connected across a 200 V, 50 Hz main. The power consumed by the coil is found to be 400 W. Find the inductance and power factor of the coil. 8

7. Write short notes on any ***four*** of the following : $4 \times 3\frac{1}{2} = 14$

(a) Parallel Resonance

(b) Self Induction

(c) Power Factor

(d) RMS Value

(e) Balanced System with respect to 3-phase

(f) Form Factor
