Code: R7100506

**R7**

B.Tech I Year (R07) Supplementary Examinations, December 2012

**BASIC ELECTRICAL ENGINEERING**

**(Common to CSE, IT and CSS)**

Time: 3 hours Max Marks: 80

Answer any FIVE questions
All questions carry equal marks
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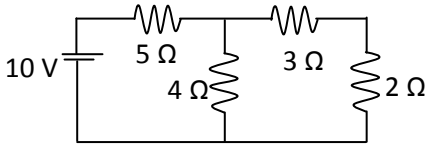
1 (a) State and explain electro magnetism related laws.
(b) State and explain faraday's laws of electromagnetic education.

2 (a) Explain the types of active elements in detail.
(b) Find the current through 2 Ω using Thevenin's theorem.




3 (a) Make comparison between electric circuit and magnetic circuits.
(b) A steel ring of 25 cm mean diameter and of circular section 3 cm in diameter has an air gap of 1.5 mm length. It is wound uniformly with 700 term of wire carrying a current of 2 A. Calculate magneto motive force, flux density and reluctance.

4 Derive the expressions for RMS value and average value. When a circuit is excited by a sinusoidal voltage source $u = u_m$ sin out. And also show that form factor of sinusoidal alternating current wave in 1.11.

5 (a) Explain the principle of operation of 1- ∅ transformers.
(b) A single phase transformer working at unity power factor has an efficiency of 90% at both 3/4$^{th}$ load and full load of 750 W. Determine the efficiency at 50% of full load.

6 (a) Explain the principles of operation of DC generators.
(b) A four-pole DC shunt generator with lap connected armature supplies a load of 100 A at 200 V. The armature resistance is 0.1 Ω and the shunt field resistance is 80 Ω. Find the total armature current and emf generated.

7 (a) Derive the emf equation of 3 - ∅ alternation.
(b) Calculate the synchronous speed ship of a 3 - phase 50 Hz, 4 - pole induction motor running at 1440 rpm.

8 Explain the principle and operation of moving iron instruments with neat diagram.

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