PVP 12

Code: **CS2T2, IT2T1**

I B.Tech-II Semester-Regular Examinations - July 2013

BASIC ELECTRICAL ENGINEERING

(For Computer Science & Engineering, Information Technology)

Duration: 3 hours Marks: 5x14=70

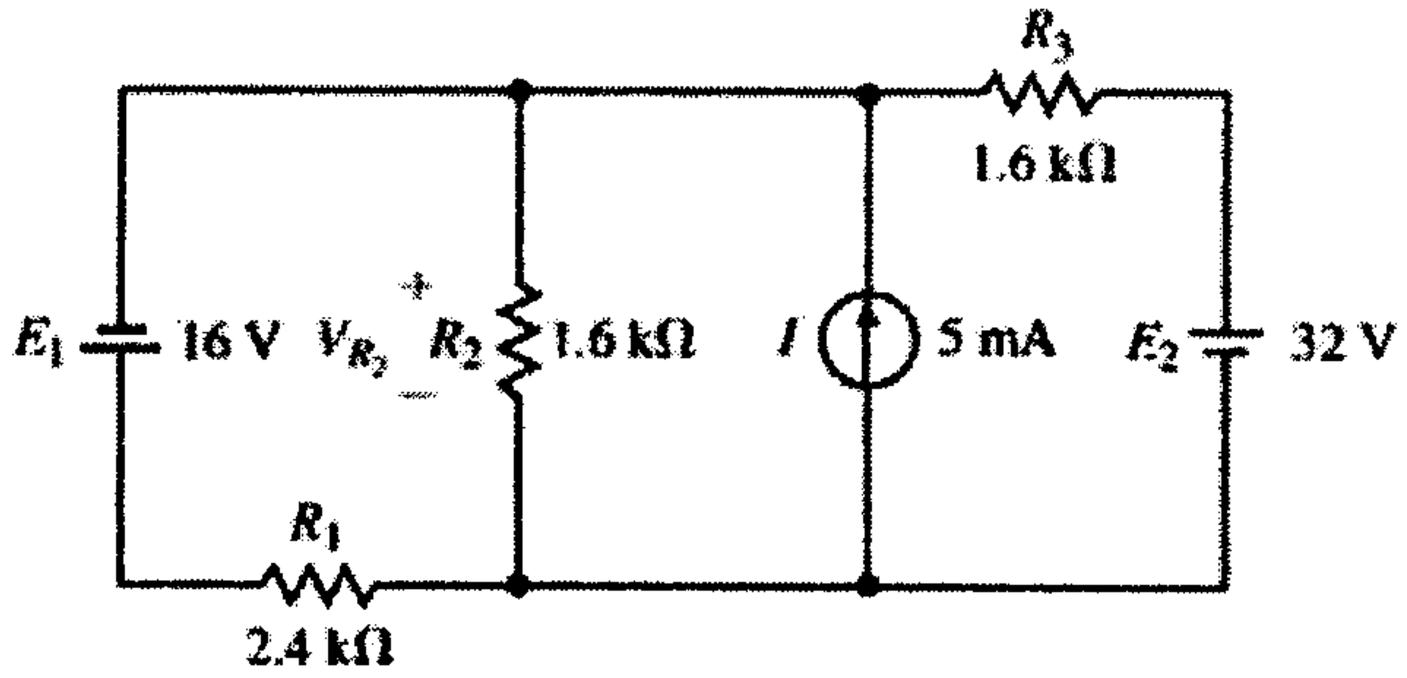
Answer any FIVE questions. All questions carry equal marks

1. a) Define an electric circuit and explain the classification of circuit elements. 7 M

   b) Derive an expression for equivalent resistance of a resistors in a circuit when they are connected in series, parallel. 7 M

2. a) State and explain the Faraday's laws of electromagnetic induction. 7 M

   b) For the circuit shown in figure, determine the voltage drop across the resistor R_2 using KVL. 7 M



3. a) What do you mean by leakage flux? Derive an expression for the leakage coefficient. 7 M

b) Two identical coils A and B of 1000 turns each lie in parallel planes such that 80% of the flux produced by one coil links with the other. A current of 5A flowing in coil A produces o flux of 0.05mwb in it. If the current in the coil A changes from 5A to – 5A in 0.01 seconds, calculate

(i) the mutual inductance and

(ii) the emf induced in coil B. 7 M

4. a) Explain sinusoidal alternating voltage and current and enumerate the different forms of alternating voltage. 7 M

b) A coil having a resistance of 7Ω and an inductance of 31.8mH is connected to 230V, 50Hz supply. Calculate the current, phase angle, power factor and power consumed. 7 M

5. a) Explain the charging process of lead acid batteries. 7 M

b) Explain the working of Nickel – Cadmium cells and discuss their advantages and drawbacks. 7 M

6. a) Explain the principle of operation of dc electrical machines. 7 M

b) Derive the torque equation of three phase induction motor. Explain the factors that affect the torque of IM. 7 M

7. a) Derive the expressions for efficiency and regulation of transformers. 7 M

b) Obtain the equivalent circuit of transformer. 7 M

8. a) Explain the construction and working of PMMC instruments. 7 M

b) Discuss the working features of digital meters. 7 M