PVP 12

Code: **EC 1T4**

I B.Tech-I Semester-Regular Examinations-February 2013

BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

(For Electronics and Communication Engineering)

Duration: 3hours Marks: 5x14=70

Answer any FIVE questions. All questions carry equal marks

1. (a) Explain in detail about the essence of electricity and write briefly about the terms Electric field, EMF and potential. [7M]

   (b) State the Ohm's law. Explain about conductors, semi-conductors and insulators in detail with examples. [7M]

2. (a) Explain about the classification of energy sources in detail and draw their Characteristics. [7M]

   (b) Determine the values of R_1, R_2 and I_1, I_2 and I_3 for the circuit shown in below Figure1: [7M]

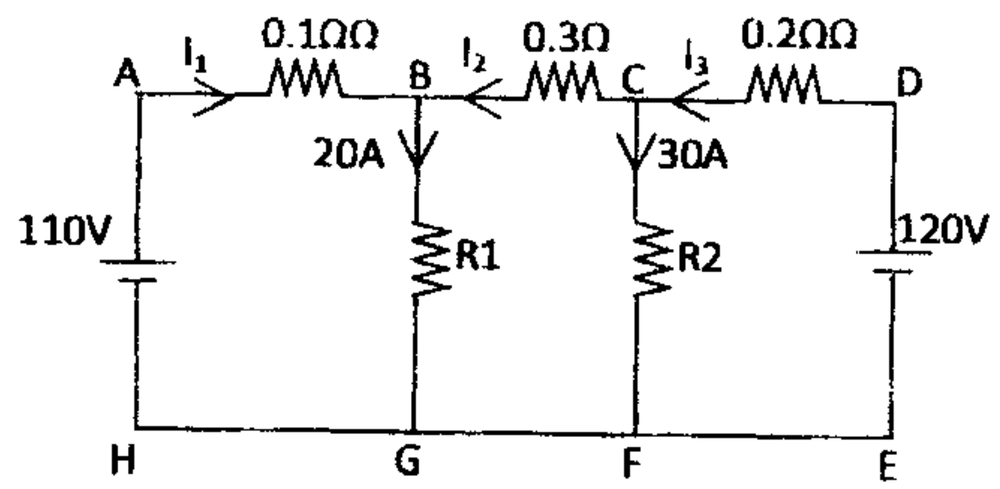

Figure 1

3. (a) State and explain Maximum Power Transfer theorem. [7M]

(b) Find the current through 3Ω resistor in the circuit shown in figure 2 by superposition theorem. [7M]

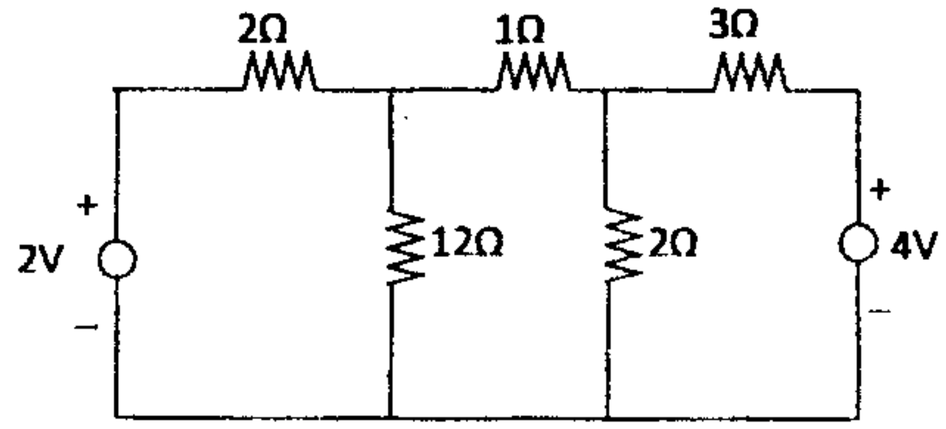

Figure 2

4. (a) Explain in detail about self -inductance and mutual inductances. Derive the co-efficient of coupling. [7M]

(b) Two magnetically coupled coils have mutual inductance of 32 mH. What is the average e.m.f. induced in one coil, if the current through the other coil changes from 3 to 15 mA in 0.004 second? Given that one coil has twice the number of turns in the other, calculate the inductance of each coil, total inductance if the two coils are connected in series. [7M]

5. (a) Discuss about the construction, operation and application of Lead acid cell. Also discuss about the maintenance of Lead acid cell. [7M]

(b) Explain about the construction and applications of Nickel-Iron cell. [7M]

6. (a) Define Force, Field Intensity [4M]

(b) Explain the following terms [10M]

(i)Parallel electric and magnetic fields

(ii)Perpendicular electric and magnetic fields

7. (a) What are the differences between electric and magnetic deflection systems. [6M]

(b) Explain working principle of electrostatic deflection in CRT with suitable equations. [8M]

8. (a) Explain in detail about energy band structures in conductor, semi-conductor and insulator. [7M]

(b) Write about the following: [7M]

(i) Atomic theory

(ii) Conduction in conductors, semi-conductors and insulators