Nepal College of Information Technology

**Unit Test**

Fall 2012

Program : BE IT\_Morning Time : 2 hrs

Semester : (VI) FM : 70

Subject : Basic Electrical Engineering PM : 35

* *Candidates are requested to give their answer as far as practicable in their own words.*
* *The figure in the margin indicates the full marks*
* ***Attempt ALL question***

1. a) Calculate the potential drop in 4Ω resistor using Maxwell’s loop current Analysis. [7]



b) Determine the magnitude and direction of current flowing in 6Ω resistor in the network below. Use Super-position theorem. [8]



2. a) Utilizing Thevenin’s theorem, calculate the current flowing through 10Ω resistor in the circuit shown below. [8]



b) State and prove the maximum power transfer theorem and show that maximum power transferred to the load is P**Lmax**. =Vth2/4RL; where symbols have their usual meanings. [7]

3. a) Explain the generation of single phase alternating emf with necessary diagrams. [7]

b) Find the average and root mean square value of the following waveform. [8]



4. a) Two impedances Z1=10<-530 Ω and Z2=20<370 Ω are connected in series across 220V, 50 Hz single phase ac source, find total impedance, total current drawn, power factor and voltage drop across each impedance. Also draw the proper phasor diagram. [8]

b) Apply Delta/Star Conversion technique to find the equivalent resistance of the given network. [7]



5. Write short notes on any two of the following: [5X2]

a) Dependent and Independent Sources

b) Resonance in RLC series circuit

c) Root Mean Square Value of ac voltage