Federal University of Technology Minna
School of Technology Education
Industrial and Technology Education Department

First Semester Examination, 2012/2013 Session
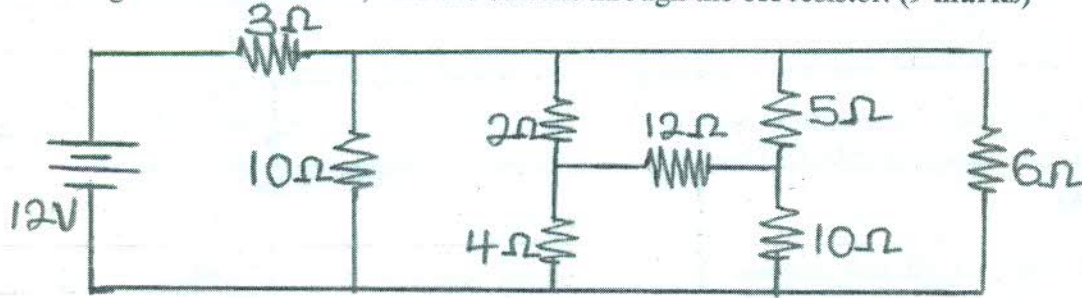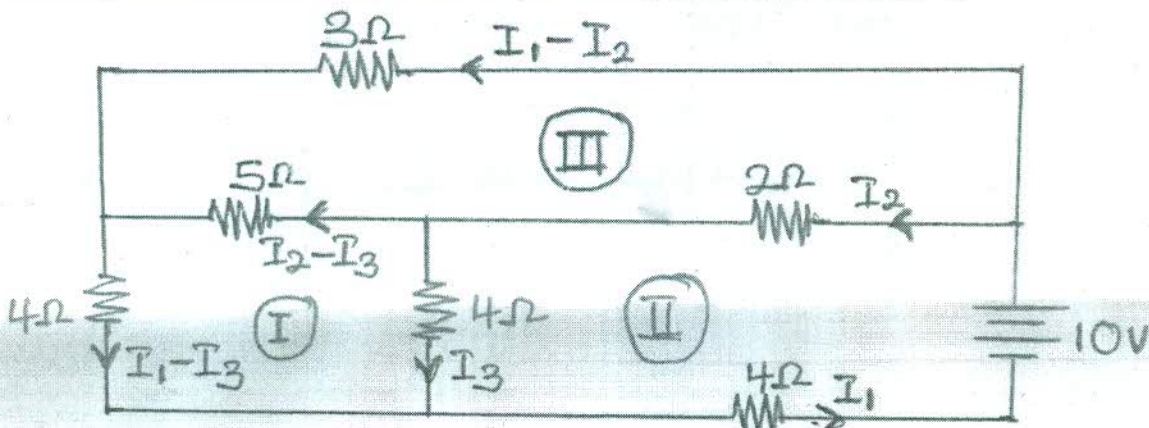**Course:** - Circuit Theory (IET 313)
Duration: - 2 hours.
Instruction: - Answer **all** Questions in Section A and **any two** Questions from Section B
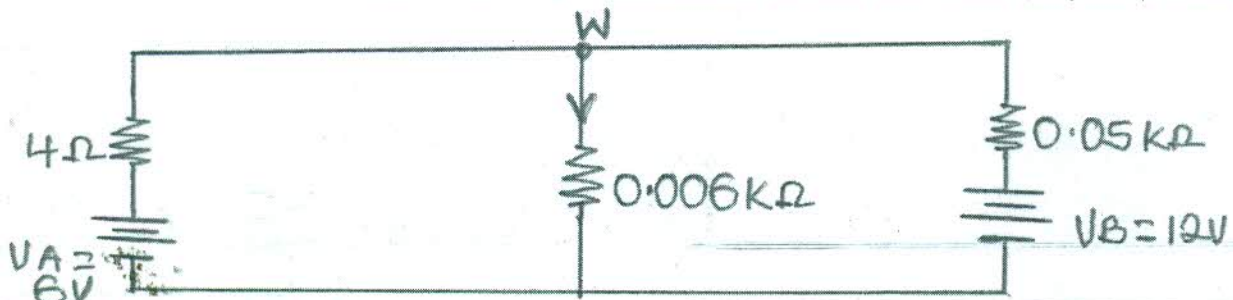
Section A

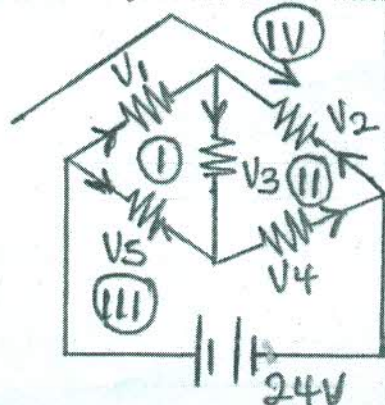1a. Using Norton's theorem, find the current through the 6Ω resistor. **(9 marks)**

1b. Using Kirchhoff's laws calculate the currents I_1, I_2 and I_3 **(11 marks)**

2a. Determine the value of I_1, I_2 and I_3 using Superposition theorem and Nodal analysis. **(14 marks)**
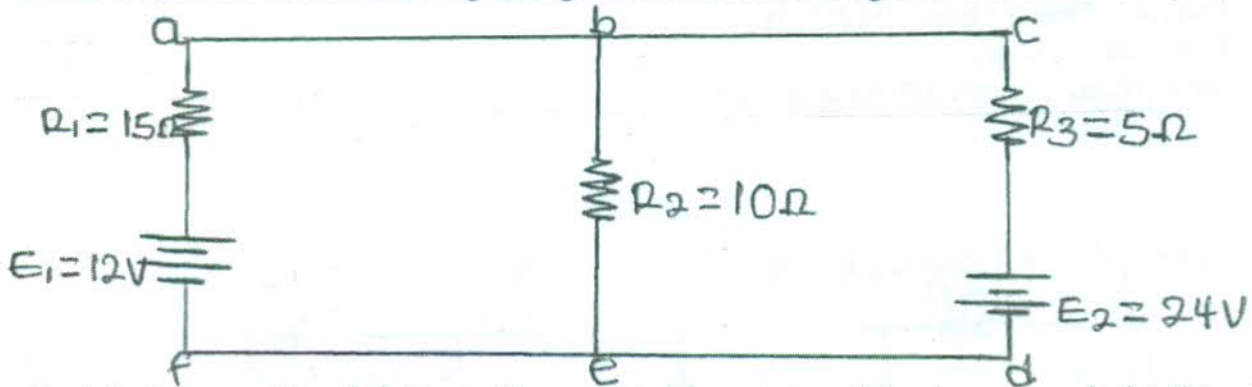

2b. Find the value of V_1, V_4 and V_5 for the circuit when $V_2 = 8V$ and $V_3 = 6V$ **(6 marks)**

Section B

3a. With the aid of diagram shows the classification of electrical network and explain each term. **(10 marks)**

4a. Determine the current I flowing through the 10Ω resistor using Thevenin's theorem. **(7 marks)**

4b. A battery consists of sixteen cells connected in series, each having an e.m.f of 1.5V and the internal resistance of 0.15 Ω. Calculate the maximum power transferred to an external load. **(3 marks)**

5a. In the network shown below, find the current supplied by the battery using star/delta transformation. **(7 marks)**
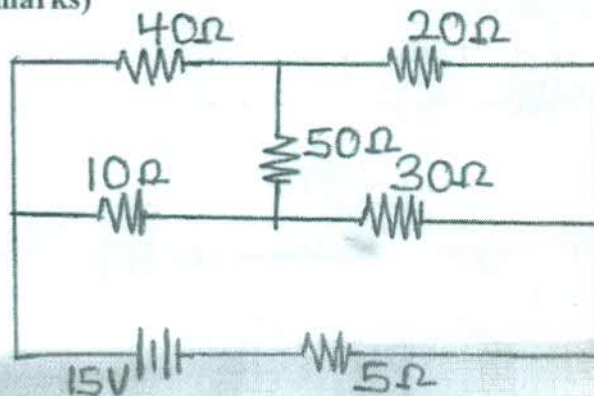
5b. Define Thevenin's voltage and Thevenin's resistance. **(3 marks)**