# Basic Electrical Technology (ESC101A)

## Assignment-1 (DC Circuit)

**Problem-1 -** Using nodal analysis, find the current flowing in the battery in Fig1**.**

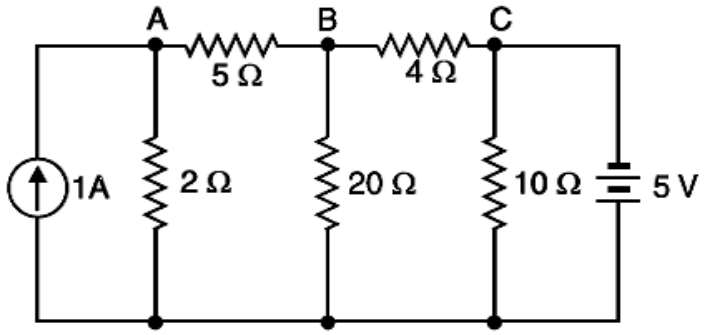


**Fig-1**

**Problem-2-** Determine Current in each branch using nodal analysis for the given circuit Fig-2

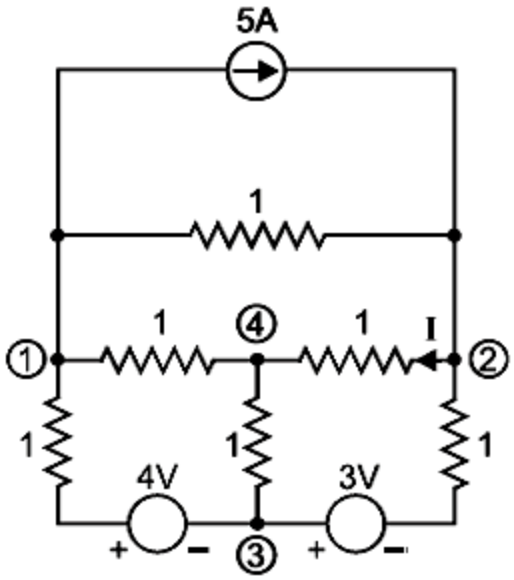


**Fig-2**

**Problem-3-** Using Mesh Analysis find current in each branch of the given circuit fig-3

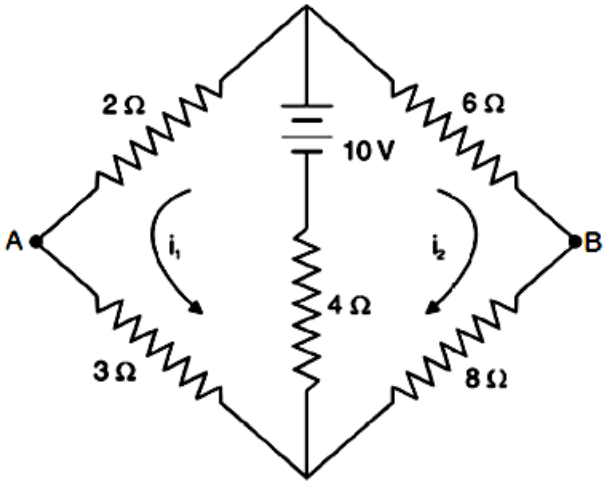


**Fig-3**

**Problem-4-** By using mesh resistance matrix, calculate the current in each branch of the circuit shown in Fig. 4

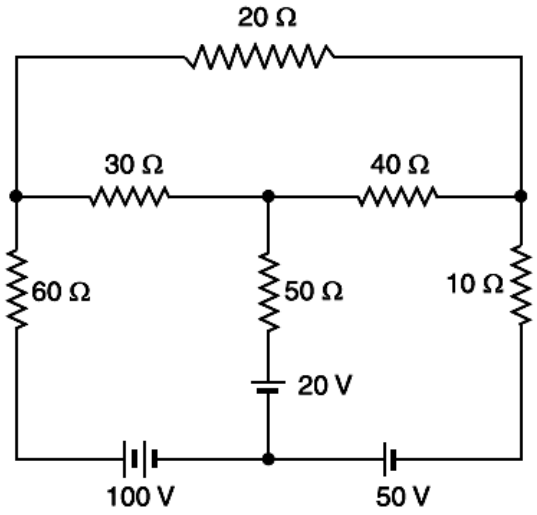


**Fig-4**

**Problem-5-** Determine the current through 6 ohm resistor using node analysis and mesh analysis.

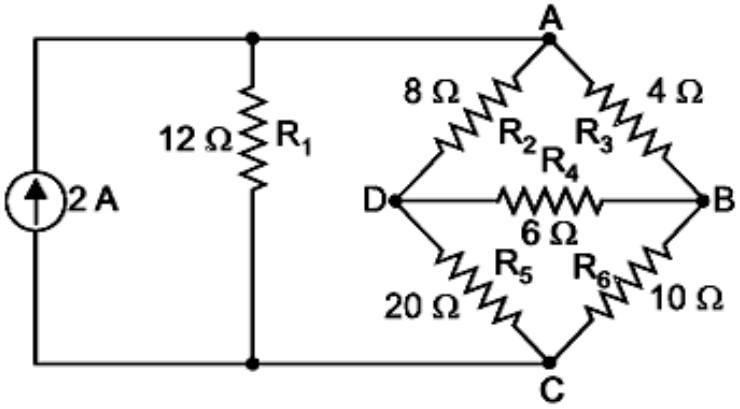


**Fig-5**

**Problem-6-** Using superposition theorem, find the current through the 40 Ω resistor in the circuit shown in Fig. 6. All resistances are in ohms.

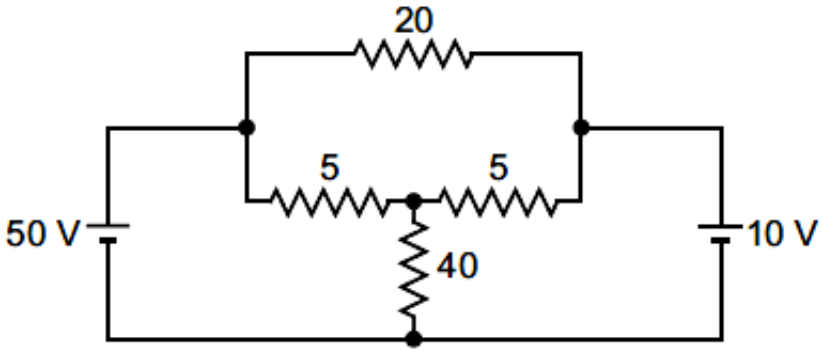


**Fig-6**

**Problem-7**- Draw the Thevenin's equivalent circuit and find the current through resistance R connected between points a and b in Fig. 7.

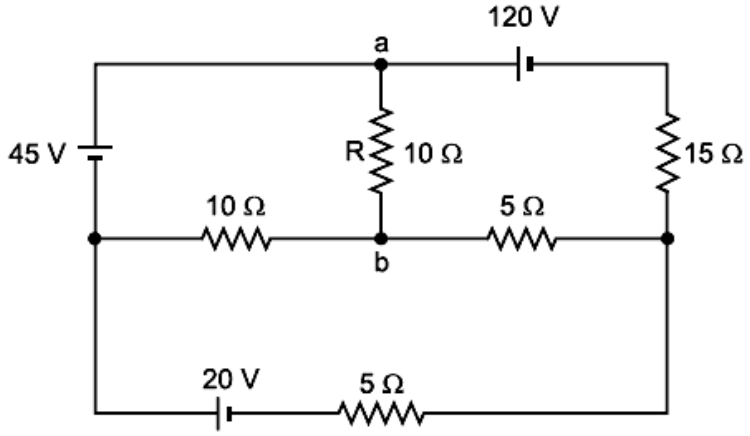


**Fig-7**

**Problem-8-** A Wheatstone bridge ABCD has the following details : *AB = 10 Ω, BC = 30 Ω, CD = 15 Ω and DA = 20 Ω*. A battery of e.m.f. 2 V and negligible resistance is connected between A and C with A positive. A galvanometer of 40 Ω resistance is connected between B and D. Using Thevenin's theorem, determine the magnitude and direction of current in the galvanometer.

**Problem-9-** Draw the Thevenin's and Norton's equivalent circuit for fig-9. Also, determine the current in 1 Ω resistor across AB of the network shown in Fig 9. All resistances are in ohms.

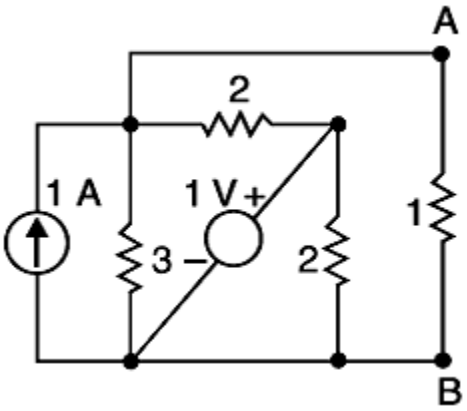


**Fig-9**

**Problem-10-** For the circuit shown in Fig. 10, find the value of R that will receive maximum power. Determine maximum power.

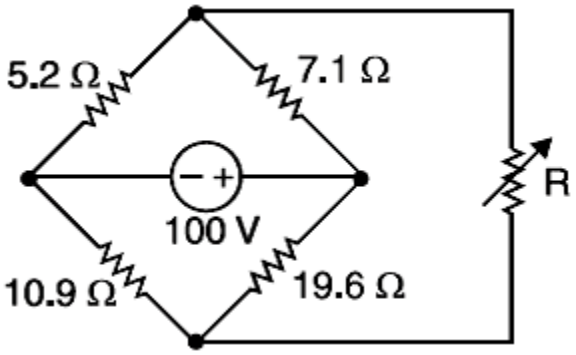


**Fig-10**

**Problem-11-** Solve the circuit shown in Fig. 11 using nodal analysis.

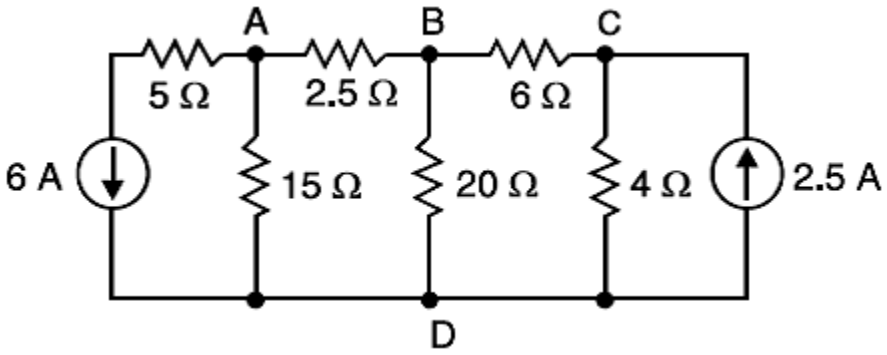


**Fig-11**

**Problem-12-** Using superposition theorem, find the current in 23 Ω resistor in the circuit shown in Fig. 12