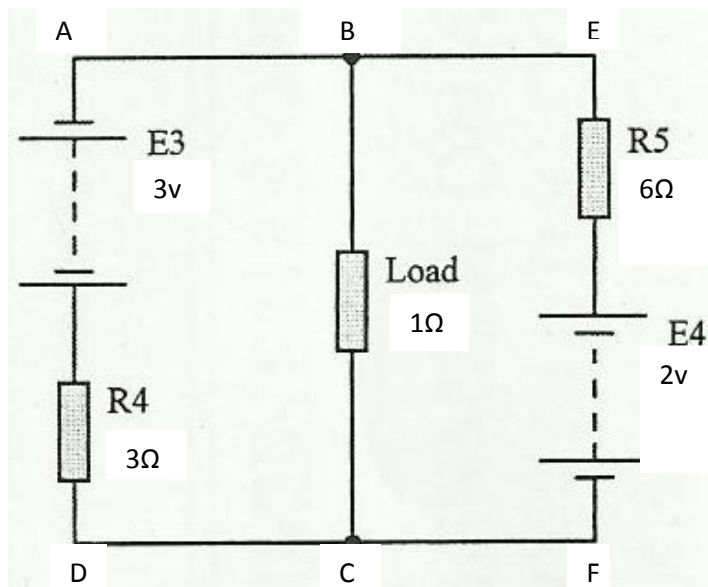


## Circuit Two Kirchoffs Law



### **Loop A B C D**

$$3v = 3\Omega I_1 + 1\Omega (I_1 - I_2)$$

$$3v = 3\Omega I_1 + 1I_1 - I_2$$

$$3v = 4\Omega I_1 - 1I_2 \text{ ----- } \textcircled{1}$$

### **Loop B E F C**

$$2v = 6\Omega I_2 + 1\Omega I_1 (I_2 - I_1)$$

$$2v = 1\Omega I_1 + 7\Omega I_2 \text{ ----- } \textcircled{2}$$

$$3v = 4\Omega I_1 - 1\Omega I_2 \text{ ----- } \textcircled{1} \times 1$$

$$2v = -4\Omega I_1 + 7\Omega I_2 \text{ ----- } \textcircled{2} \times 4$$

$$3v = 4\Omega I_1 - 1\Omega I_2$$

$$8v = -16\Omega I_1 + 28\Omega I_2$$

$$11v = 27\Omega I_2$$

$$I_2 = \frac{11v}{27\Omega} = 0.407a$$

### **Sub $I_2$ into equation $\textcircled{1}$**

$$5v = 0\Omega I_1 + 6\Omega I_2$$

$$6\Omega I_2 = 5v$$

$$I_1 = 5v/6\Omega = 0.833 A$$

$$I_1 = \left(\frac{5v}{6\Omega}\right) = 0.833a$$

$$I_1 - I_2 = 0.851a - 0.407a = 0.444a$$