



Princess Sumaya  
University  
for Technology

## King Abdullah II School of Engineering

### EE21221 Electric Circuits (1) Section #1

Quiz # 2  
Tuesday 16/11/2021

Name: .....

Q.1) Find  $i_8$ ,  $i_4$ ,  $i_{10}$ ,  $i_2$ ,  $v_8$ ,  $v_4$ ,  $v_2$ , and  $P_{ix}$  in the circuit shown in Figure Q.1. [8-Points]

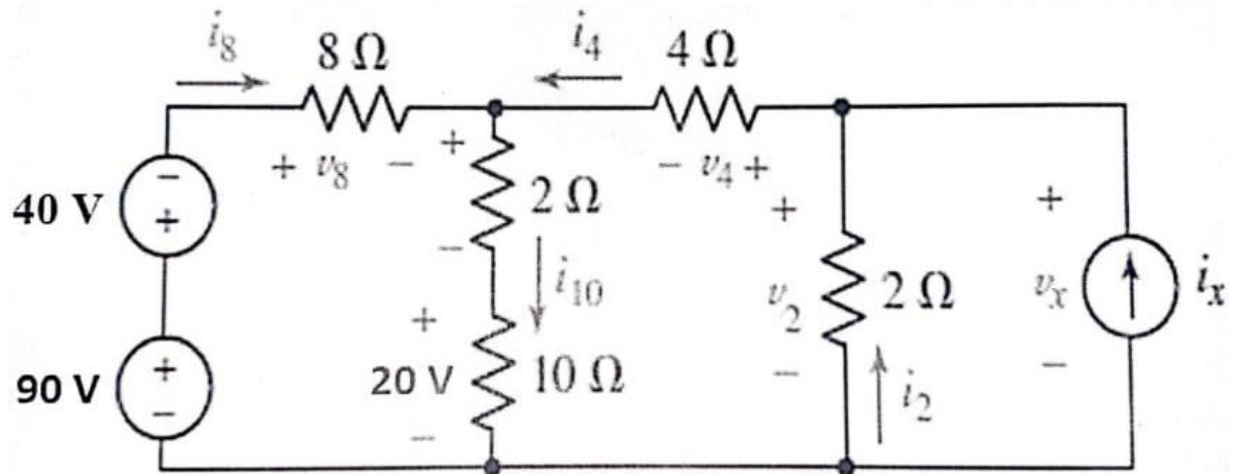


Figure Q.1

Solution:

$$i_8 = 3.25A$$

$$i_4 = -1.25A$$

$$i_{10} = 2A$$

$$i_2 = -9.5A$$

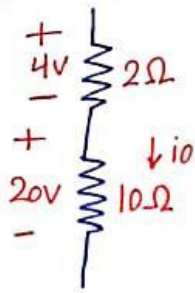
$$v_8 = 26V$$

$$v_4 = -5V$$

$$v_2 = 19V$$

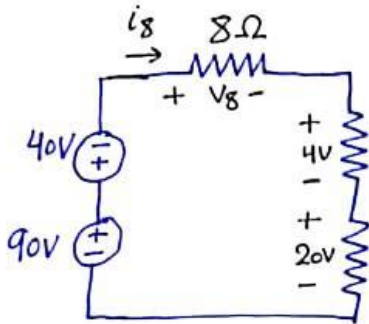
$$P_{ix} = -156.75W$$

Q1)



$$i_{10} = \frac{20}{10} = 2A$$

$$V_{2\Omega} = 2 \times 2 = 4V$$

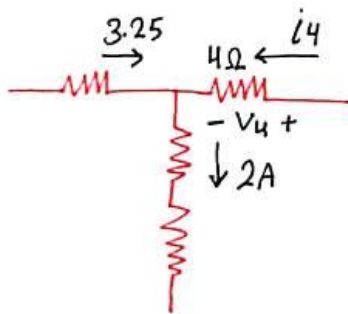


KVL

$$-90 + 40 + V_8 + 4 + 20 = 0$$

$$V_8 = 26V$$

$$i_8 = \frac{26}{8} = 3.25A$$

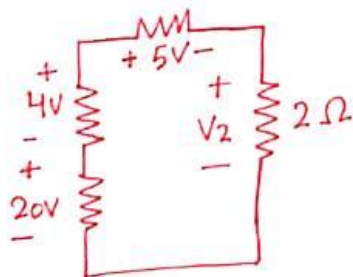


KCL

$$3.25 + i_4 - 2 = 0$$

$$i_4 = -1.25A$$

$$V_4 = i_4 \times 4\Omega = -1.25 \times 4 = -5V$$

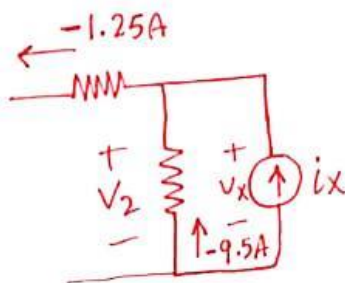


KVL

$$-20 - 4 + 5 + V_2 = 0$$

$$V_2 = 19V$$

$$i_2 = \frac{-19}{2} = -9.5A$$



KCL

$$i_x + (-9.5) - (-1.25) = 0$$

$$i_x = 8.25A$$

$$V_x = V_2 = 19V$$

$$P_{ix_{obs}} = -19 \times 8.25 = -156.75W$$

Q.2) In the circuit shown in Figure Q.2, find  $v_2$ . [2-Points]

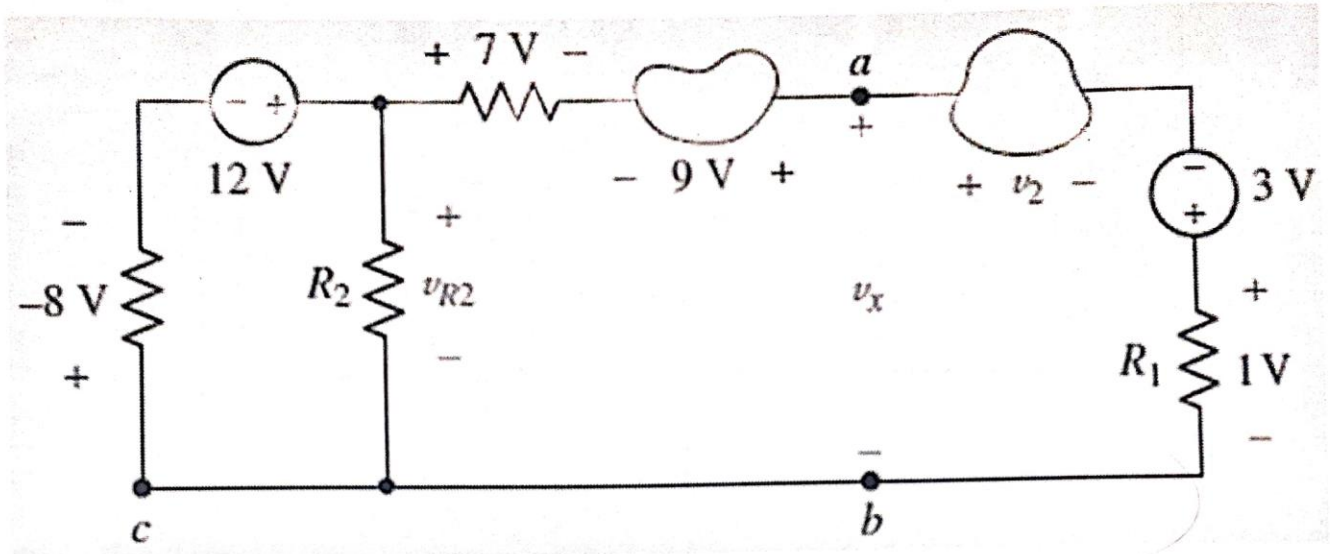


Figure Q.2

Solution:

$$v_2 = \boxed{24 \text{ V}}$$

KVL

$$+(-8) - 12 + 7 - 9 + v_2 - 3 + 1 = 0$$

$$\boxed{v_2 = 24 \text{ V}}$$