Princess Sumaya University for Technology
جامعة الأميرة سمية للتكنولوجيا

King Abdullah II School of Engineering

EE21221

Electric Circuits (1)

Section #3

Quiz #2

Wednesday 17/11/2021

Name: ……. [ ]

Q.1) Find i_8, i_4, i_{10}, i_{20}, v_{10}, v_4, v_{20}, and P_{ix} in the circuit shown in Figure Q.1. [8-Points]

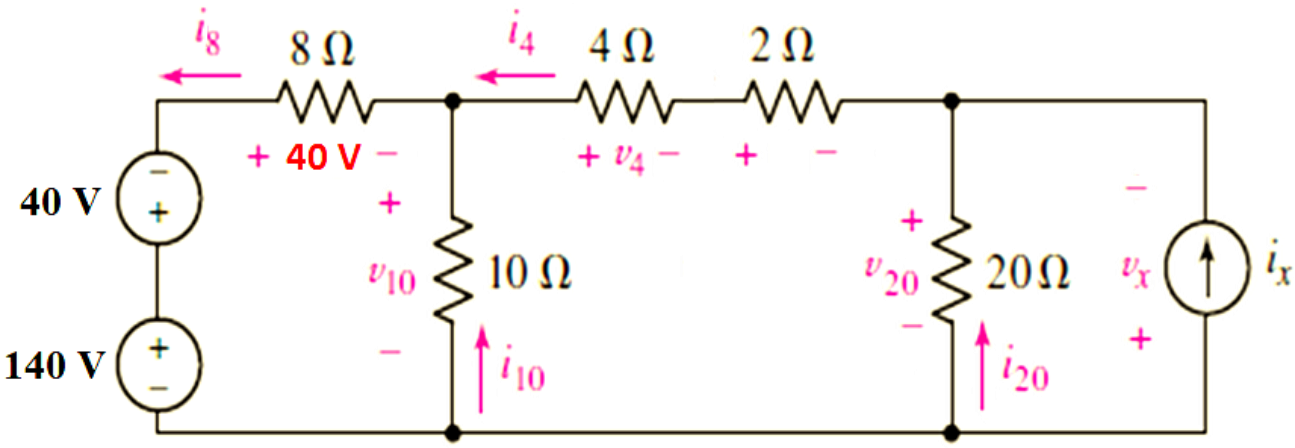


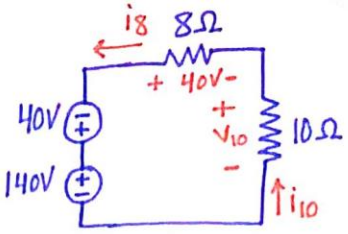
Figure Q.1

Solution:

i_8=	- 5 A	i_4=	1 A	i_{10}=	- 6 A	i_{20}=	- 3.3 A
v_{10}=	60 V	v_4=	- 4 V	v_{20}=	66 V	P_{ix}=	- 283.8 W

Q1) * Ohm's Law

$$i_8 = \frac{-40}{8} = -5A$$



* KVL

$$-140 + 40 + 40 + V_{10} = 0$$

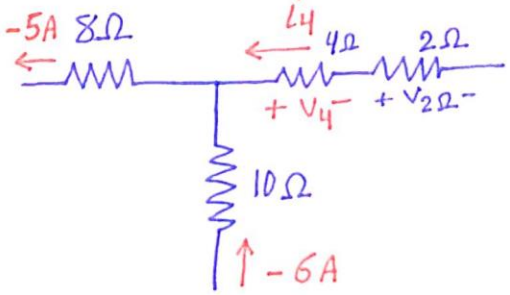
$$V_{10} = 60V$$

$$i_{10} = \frac{-60}{10} = -6A$$

* KCL

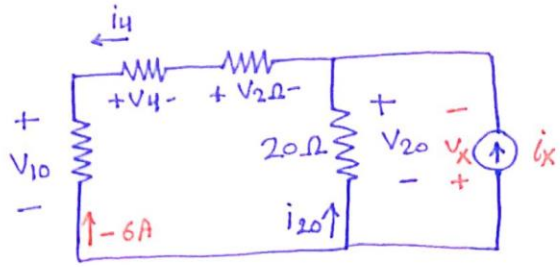
$$i_4 + (-6) - (-5) = 0$$

$$i_4 = 1A$$



$$V_4 = -i_4 * 4\Omega = -4V$$

$$V_{2\Omega} = -1 * 2\Omega = -2V$$



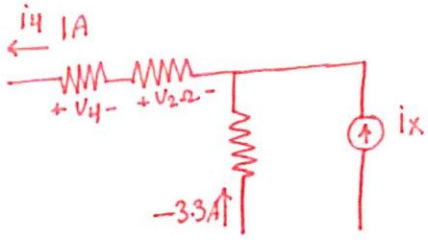
* KVL

$$-V_{10} + V_4 + V_2 + V_{20} = 0$$

$$V_{20} = 60 - (-4) - (-2) = 66V$$

$$i_{20} = \frac{-66}{20} = -3.3A$$

$$V_x = -V_{20} = -66V$$



* KCL

$$i_x + (-3.3) - (1) = 0$$

$$i_x = 4.3A$$

$$P_{ix} = -(66) * (4.3) = -283.8w$$

P_{ix} abs

$-283.8w$ ↓ Supply

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

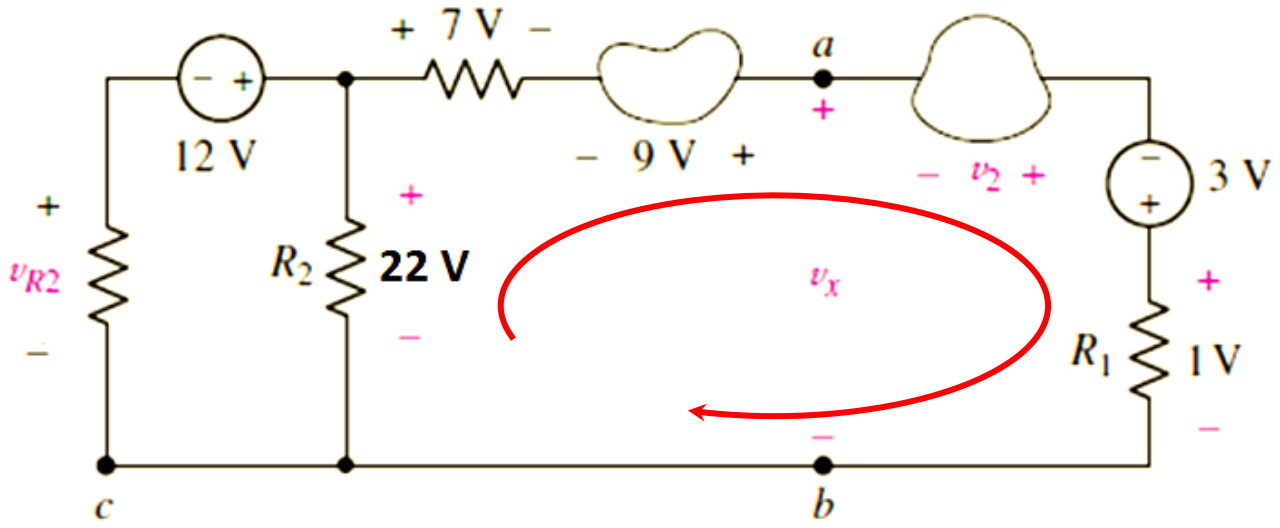


Figure Q.2

Solution:

v_2= -26 V

KVL :

$$-22 + 7 - 9 - v_2 - 3 + 1 = 0 \implies -v_2 - 26 = 0 \implies v_2 = -26\,V$$