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FACULTY OF ENGINEERING & ARCHITECTURE

SPRING TERM 2011-12

Name:.....

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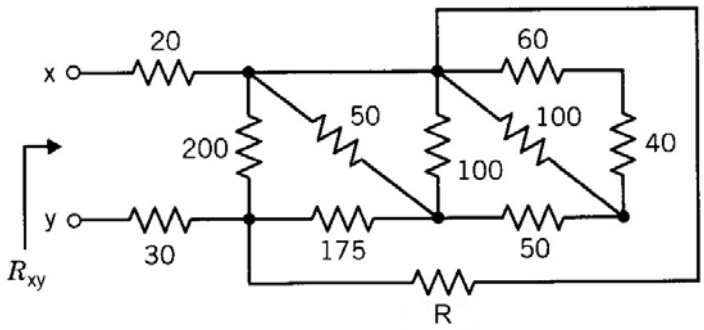
(EECE210) ELECTRIC CIRCUITS

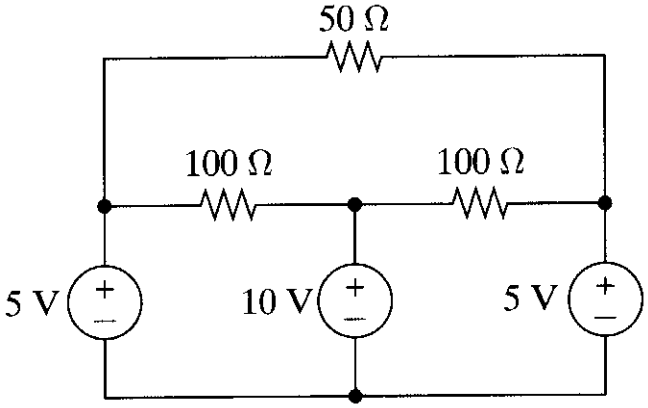
CLOSED BOOK (1 ½ HRS)

Problem 1:
In the circuit shown below, all resistances are in ohms. Determine the equivalent resistance R_{xy} if R = 100 Ω.



a) 50 Ω
b) 100 Ω
c) 200 Ω
d) 400 Ω
e) None of the above

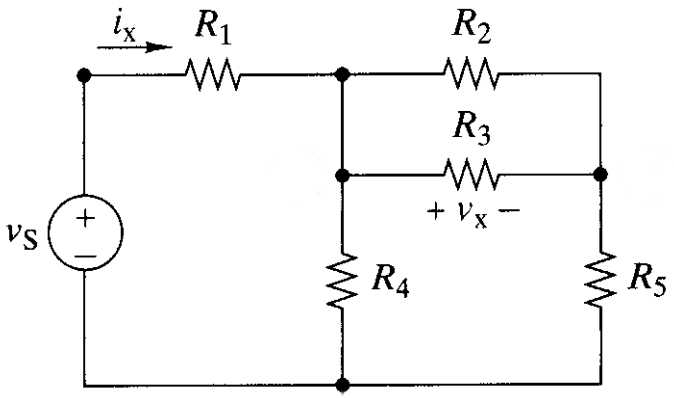
Problem 2:
Determine the power developed by the 10 V source in the circuit shown below.



a) 1 W
b) 2 W
c) 3 W
d) 4 W
e) None of the above

Problem 3:

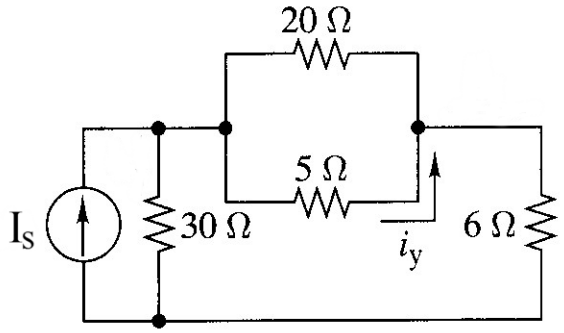
Find v_X in the circuit shown below when $v_S = 12$ V and $R_1 = R_2 = R_3 = R_4 = R_5 = 8$ kΩ.



a) 0.5 V
b) 1.0 V
c) 1.5 V
d) 2.0 V
e) None of the above

Problem 4:

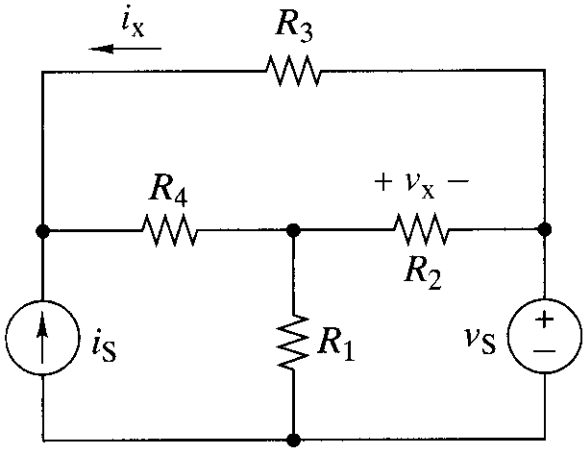
If i_y= 12 A in the network shown below, find I_S.



a) 5 A
b) 10 A
c) 15 A
d) 20 A
e) None of the above

Problem 5:

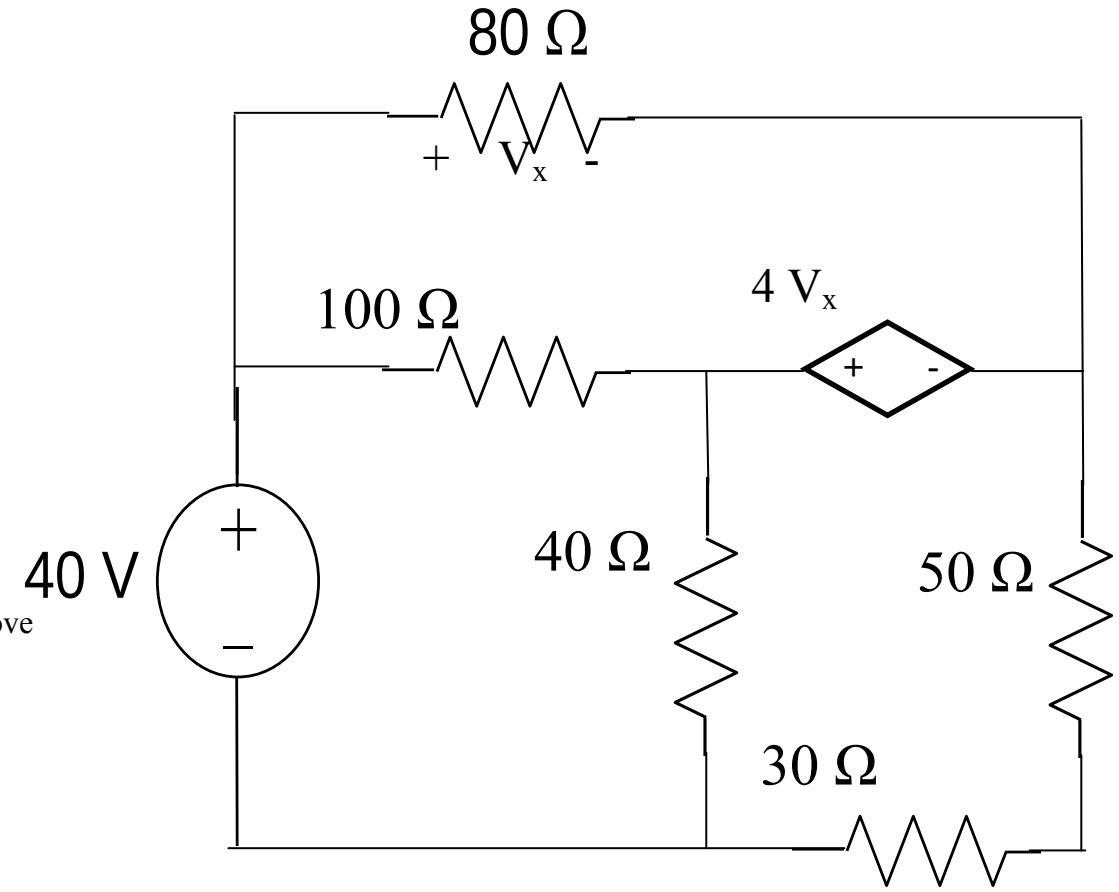
Find i_X in the circuit shown below when $v_S = 30$ V, $i_S = 4$ mA, and $R_1 = R_2 = R_3 = R_4 = 10$ kΩ.



a) -0.2 mA
b) -0.8 mA
c) -1.2 mA
d) -1.8 mA
e) None of the above

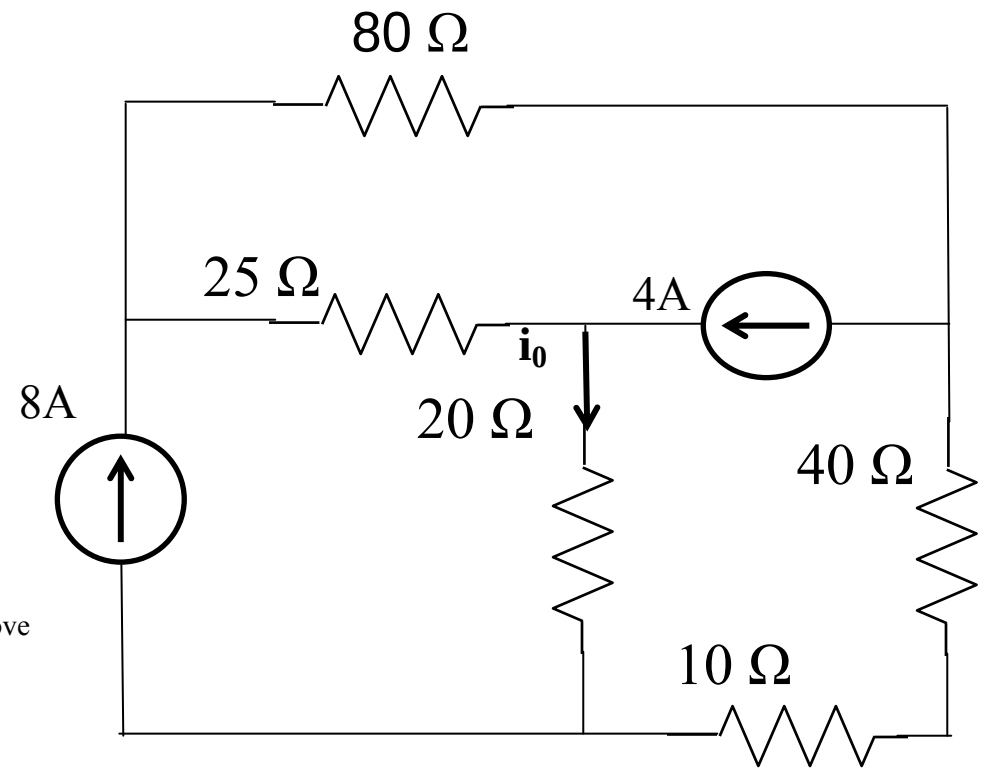
Problem 6:

In the following circuit, find Vx in Volts.



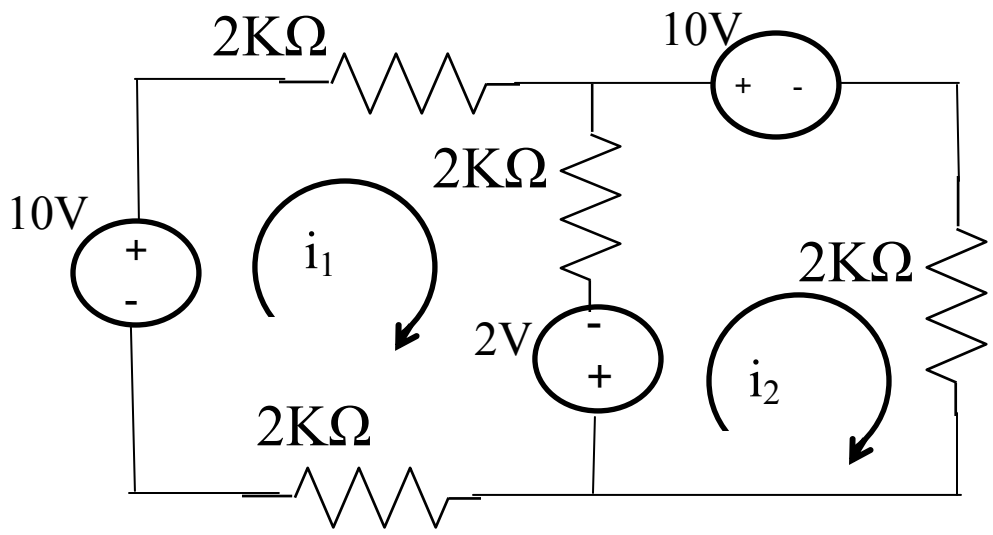
a) -40 V
b) -18.75 V
c) -28.125 V
d) -16.25 V
e) None of the above

Problem 7:
In the circuit below, find i_0 in Amperes.



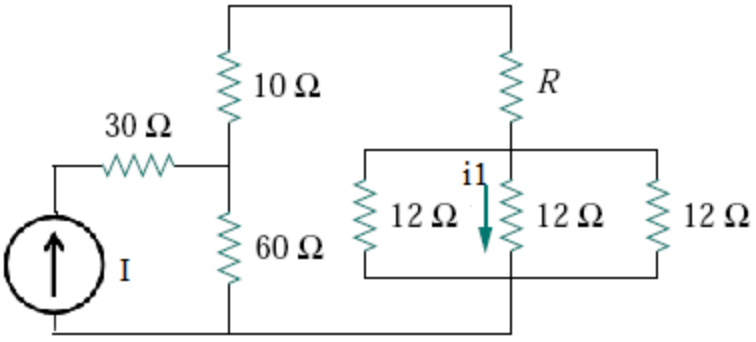
a) 0A
b) 9.83
c) 8.34
d) 7.25
e) None of the above

Problem 8:
Write the mesh current equations for the circuit shown if the currents are expressed in mA.



a) $10 - 9i_1 + 2i_2 = 0$ and $12 - 3i_1 + 4i_2 = 0$
b) $12 - 9i_1 + 3i_2 = 0$ and $12 - 3i_1 + 6i_2 = 0$
c) $10 - 6i_1 + 3i_2 = 0$ and $10 - 2i_1 + 6i_2 = 0$
d) $12 - 6i_1 + 2i_2 = 0$ and $12 - 2i_1 + 4i_2 = 0$
e) None of the above

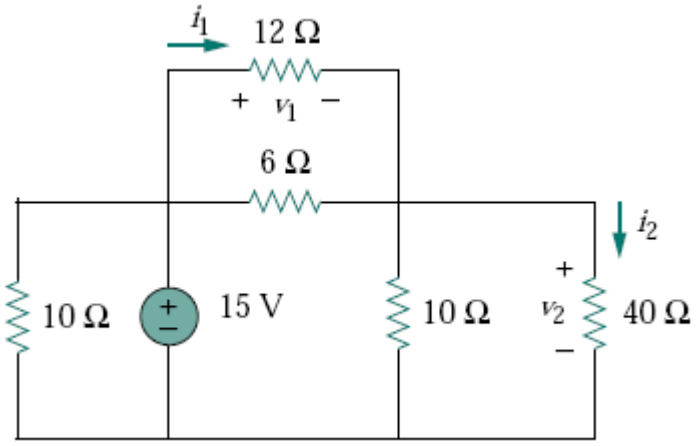
Problem 9:
If R=6 ohms and I= 2A. Find the current i1.



a- 0.5 A
b- 1A
c- 0.75A
d- 0.25A
e- None of the above

Problem 10:

Find the current i1.



a- 500 mA

b- 1A

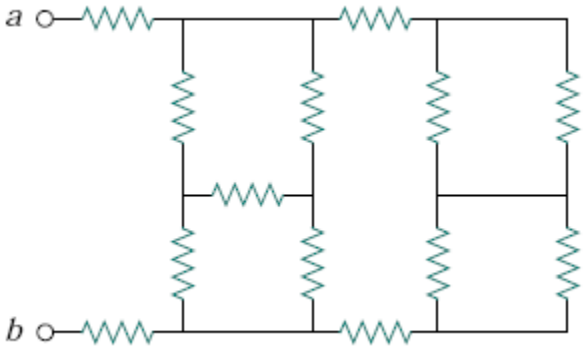
c- 833.3 mA

d- 416.7 mA

e- None of the above

Problem 11:

Find Req as seen from terminals a and b if the value of every resistor is 9 ohms:



a- 5 ohms

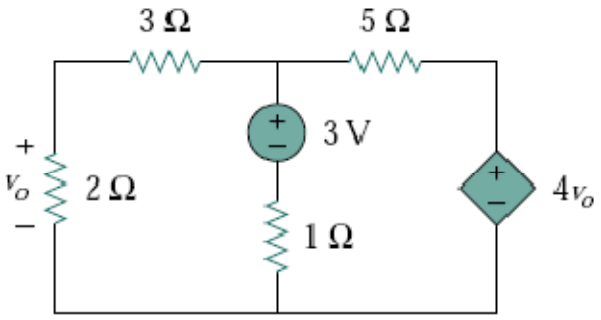
b- 24.75 ohms

c- 25.25 ohms

d- 27 ohms

e- None of the above

Problem 12:
Find the power dissipated in the 2 ohm resistor



a. 617.3 mW
b. 1.39 W
c. 420 mW
d. 2.4 W
e. None of the above