AMERICAN UNIVERSITY OF BEIRUT
Department of Electrical and Computer Engineering
EECE210 Fall 2004

Quiz 1, November 5, 2004

Prof Karameh

Directions:

- You will have 1.5 hrs for this quiz.
- Write down your name *in ink* on all the pages. DO IT NOW!
- Answers must be explained or derived. DO NOT just write down an answer.
- It is a good idea to read the whole test before you begin. Some problems are divided into several parts with percentages indicated. You might be able to solve different parts independently.
- DO NOT talk to any of your colleagues under any circumstances. You will be penalized without warning.

YOUR NAME HERE:

EECE210 - Quiz 1- Fall 2004. **NAME:**

PROBLEM 1 (10%)

Consider the resistive network shown in figure 1. Find the voltage across the 6Ω resistor V_6.

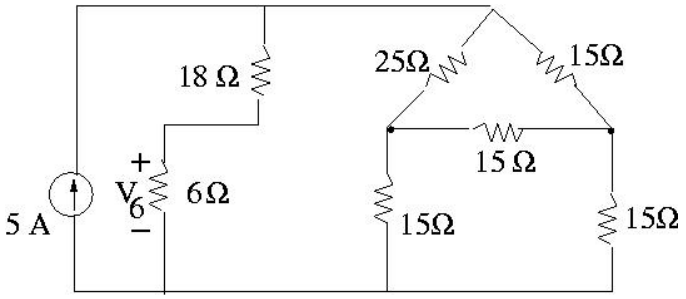

Figure 1: Problem 1

PROBLEM 2 (20%)

Consider the network shown in figure 2,

a) If the dependent voltage source is such that

$$V_d = -2V_x,$$

find the amplification ratio $A_v = V_2/V_1$ where V_2 and V_1 are as labelled.

b) If the dependent voltage source is $V_d = aV_x$, find the constant a such that the current i_o in the 1/4 Ω resistor is zero.

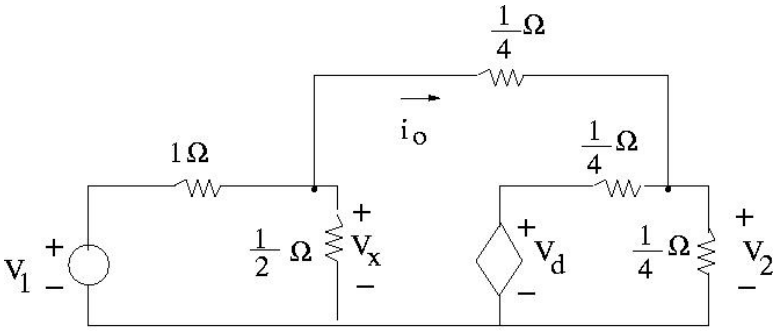

Figure 2: Problem 2

PROBLEM 3 (20%)

Consider the resistive network shown in figure 3.

(a) Find the voltage across the resistance termed R for any value of R.

(b) Find the maximum power P_{max} that could be transferred to the load resistance R.

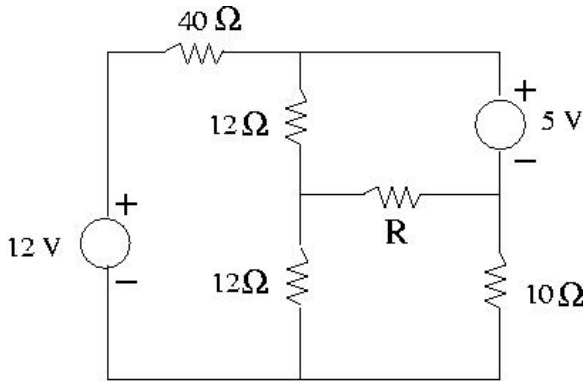

Figure 3: Problem 3

Problem 4 (10%)

Find the power absorbed by the 10 Ohm resistor (termed with voltage v_{10}) in the following circuit (figure 4) **using superposition**.

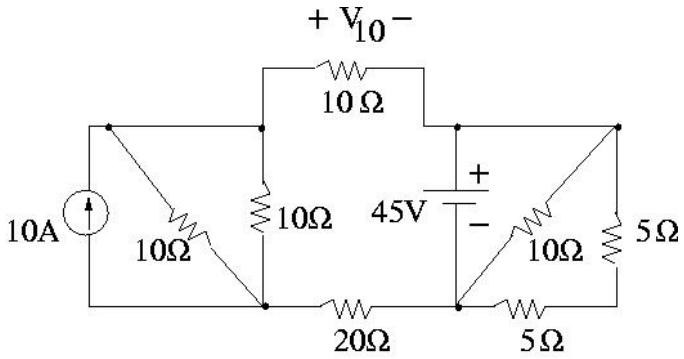

Figure 4: Problem 4

PROBLEM 5 (20%)

Find the thevenin equivalent of the circuit shown to the *left* of a,b (inside the box).

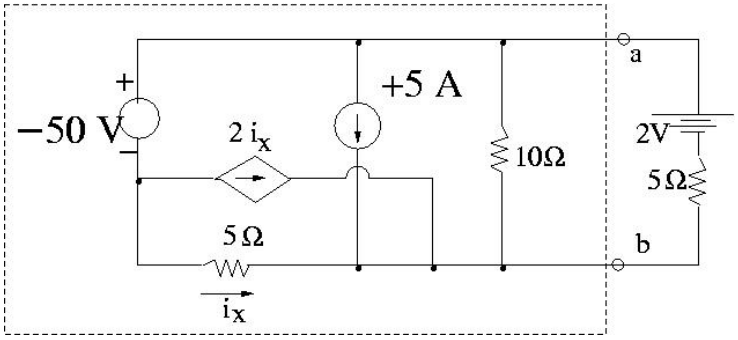

Figure 5: Problem 5

PROBLEM 6 (10%)

Consider the circuit shown in figure 6 below.

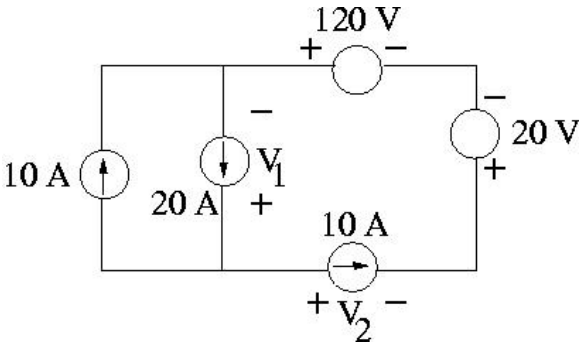

Figure 6: Problem 6

(a) Is the interconnection valid? explain.

(b) If you answered yes in part (a), find V_1, V_2 if the total power absorbed in this circuit is 2150 W.

PROBLEM 7 (10%)

Consider the circuit shown in figure 7. Find the constant k such that $v_y = 0$.

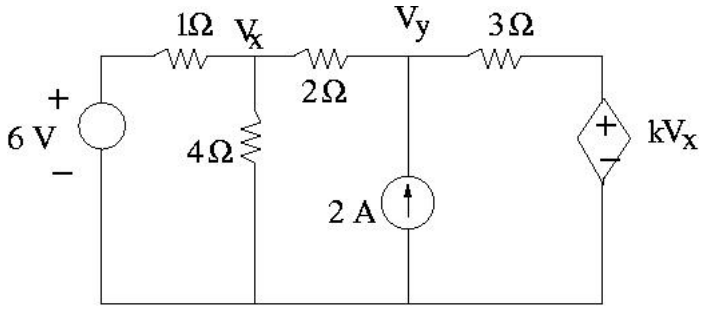

Figure 7: Problem 7