

ECSE 2010  
Electric Circuits  
Exam 1  
Spring 2007

Name \_\_\_\_\_

Section (please circle one)

MR  
10-12  
Millard

MR  
2-4  
Abouzeid

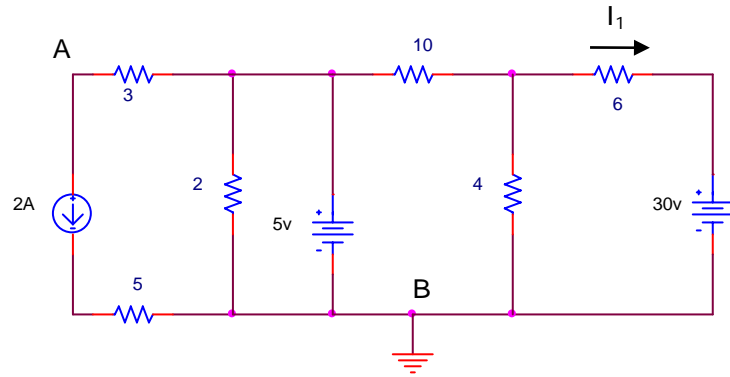
Problem No.	Pts.	Score
1	20pts	
2	20pts	
3	20pts	
4	20pts	
5	20pts	
Total	100pts	

Please Note:

- \* Place all your answers in the spaces provided.
- \* You MUST show your work to receive any credit.

Problem 1 (20pts)

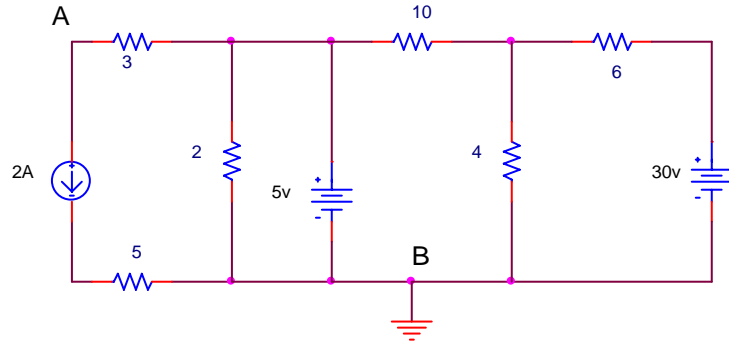
a.) Find  $I_1$  in the circuit shown. (10pts)



$I_1$	
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Problem 1 (cont)

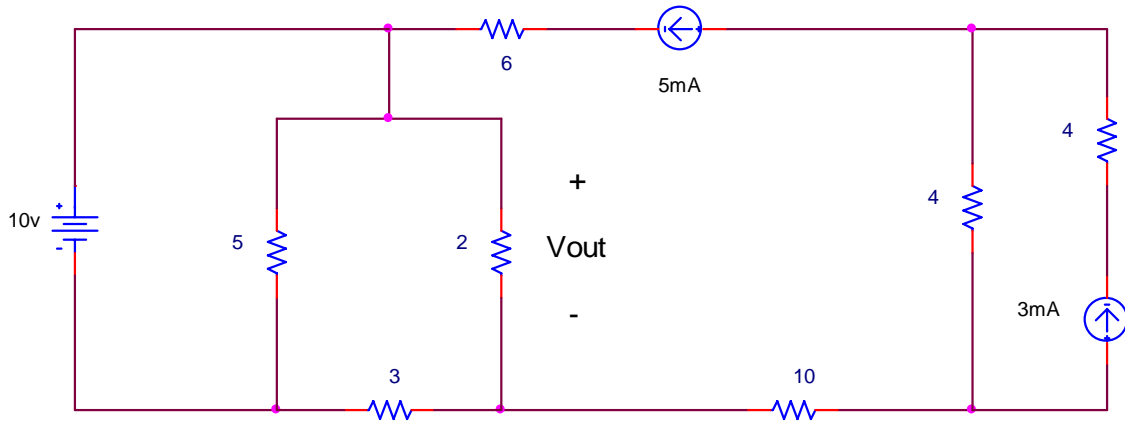
b.) Find the voltage  $V_{AB}$  in the circuit shown. (10pts)



$V_{AB}$	
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Problem 2 (20pts)

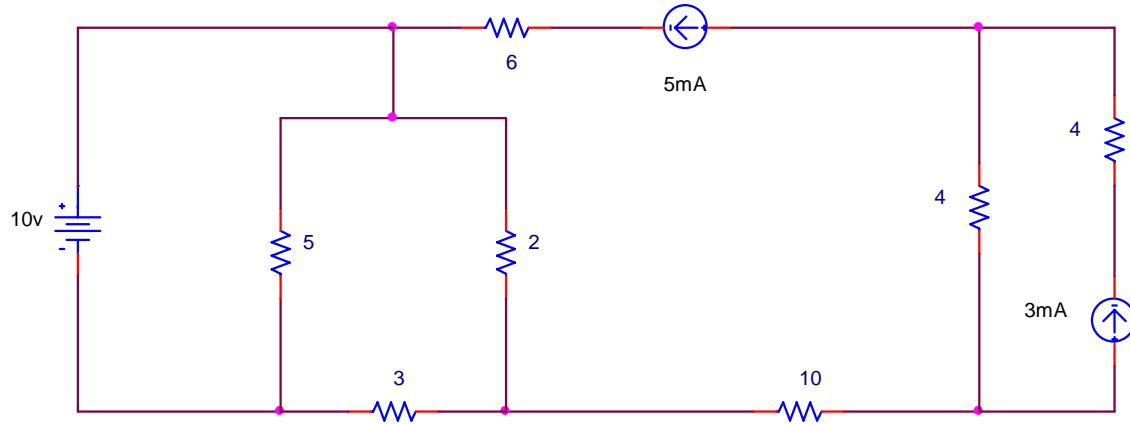
a.) Find the voltage  $V_{out}$  across the 2 ohm resistor due to each of the sources using superposition for the circuit shown. (15pts)



$V_{out}$ (10v)	
$V_{out}$ (3mA)	
$V_{out}$ (5mA)	

Problem 2 (cont)

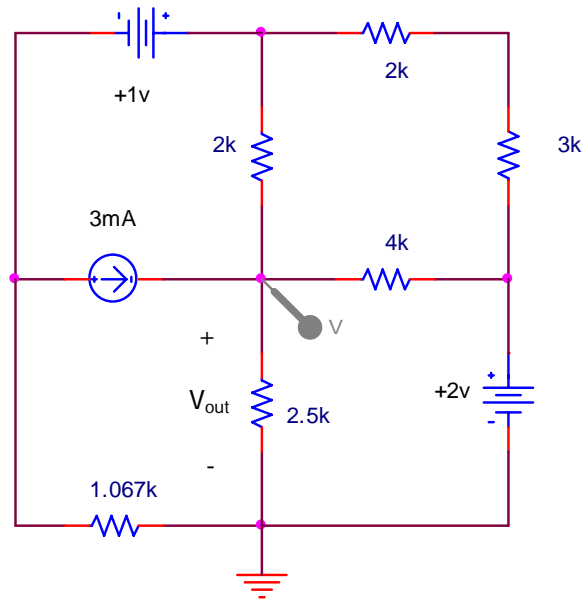
b.) Find the power delivered to the 5, 6, and the 3 ohm resistors. (5pts)



$P_{5\text{-ohm}}$	
$P_{6\text{-ohm}}$	
$P_{3\text{-ohm}}$	

### Problem 3 (20pts)

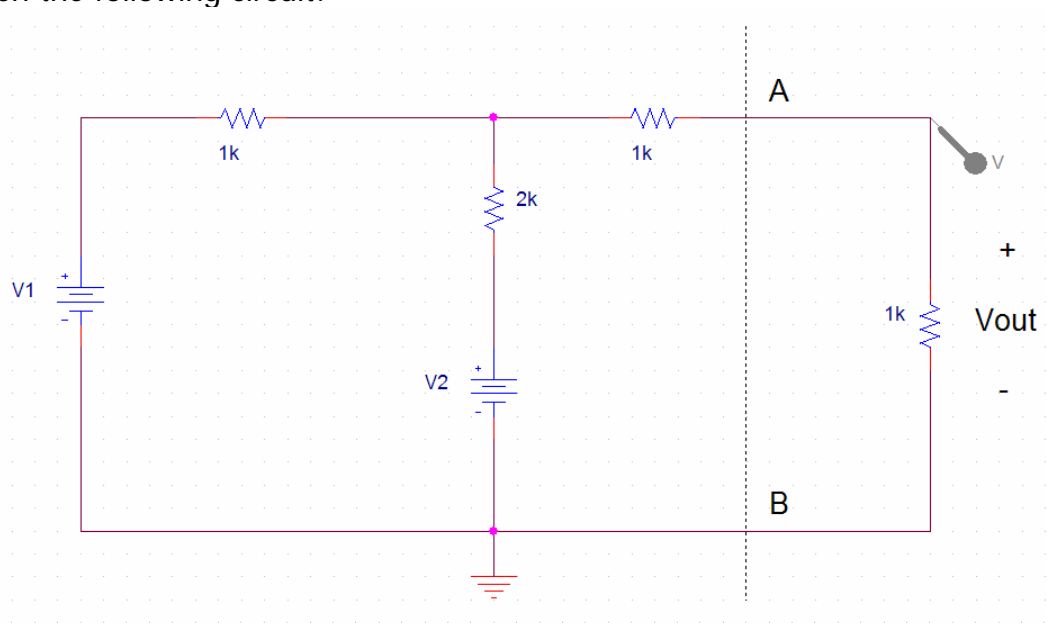
Find  $V_{out}$  for the circuit shown (where the probe is located with respect to ground) using your choice of either mesh or nodal analysis. Please show all your work.



$V_{out}$	
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Problem 4 (20pts)

Given the following circuit:



a.) Find the Thevenin equivalent circuit to the left of the dashed line (between points A & B) in terms of  $V_1$  and  $V_2$ . (10pts)

$V_{TH}$	
$R_{TH}$	

Problem 4 (cont)

b.) Find  $V_{out}$  across the 1k resistor if  $V_1 = 10v$  and  $V_2 = 20v$ . (5pts)

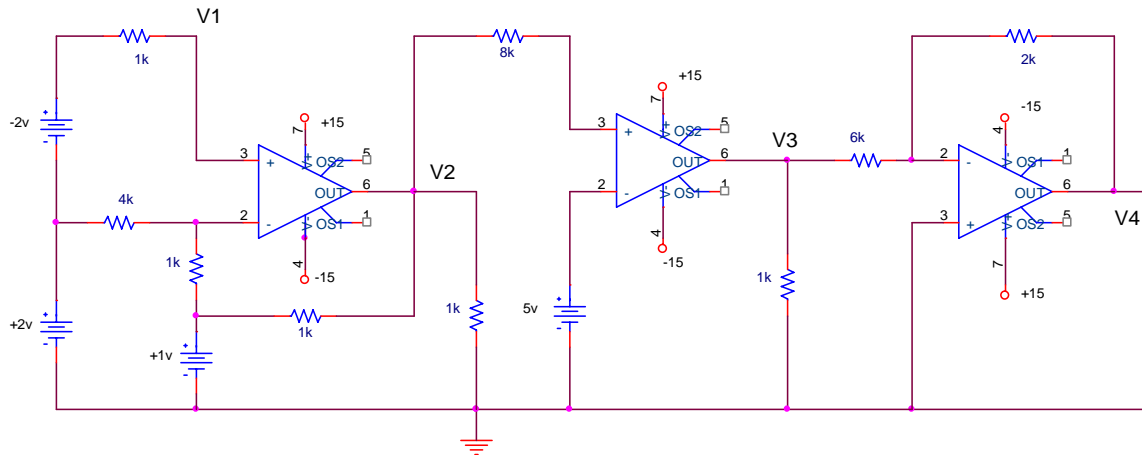
$V_{out}$	
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c.) Determine the power supplied by the 10v source. (5pts)

$P_{10v}$	
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### Problem 5 (20pts)

Assume that all the Op Amps have  $\pm 15$  volt supplies for the following circuits.

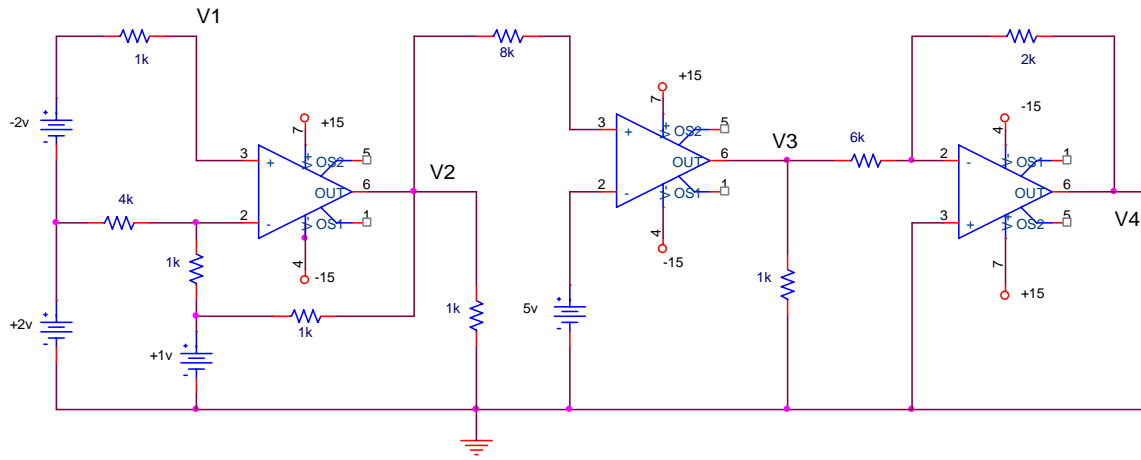


a.) Find V1 and V2 in the above circuit. (10pts)

V1	
V2	

Problem 5 (cont)

b.) Find V3 and V4 in the circuit (the same circuit as part a). (10pts)



V3	
V4	

Extra space (if needed)

Name \_\_\_\_\_

Extra space (if needed)

Name \_\_\_\_\_