King Fahd University of Petroleum & Minerals
Electrical Engineering Department

EE 204_092 Fundamentals of Electric Circuits

Major Exam II
5 May, 2010
7:00 PM – 8:30 PM

Name (Capital Letters)	
ID Number	
Lecture Section Number	
Serial Number	
Lab Section Number	

Problem	Maximum	Score
1	10	
2	10	
3	10	
4	10	
5	10	
6	10	
Total	60	

SHOW ALL OF YOUR WORK IN A CLEAR NEAT WAY

Good luck!

Problem 1:

Find the Thevenin's equivalent of the circuit connected to the 2 Ω resistor between terminals a-b and use it to compute the current I_{ab}.
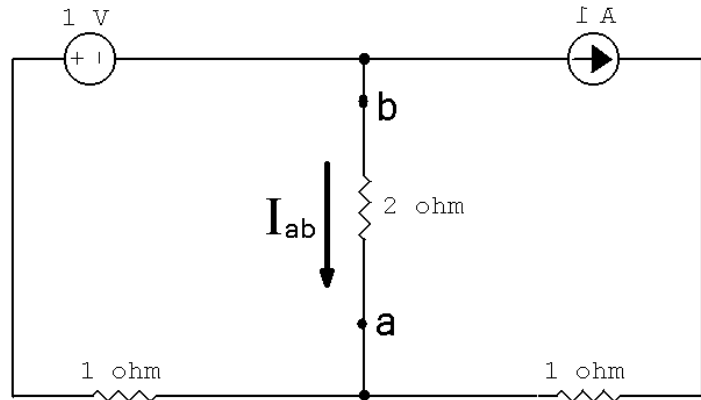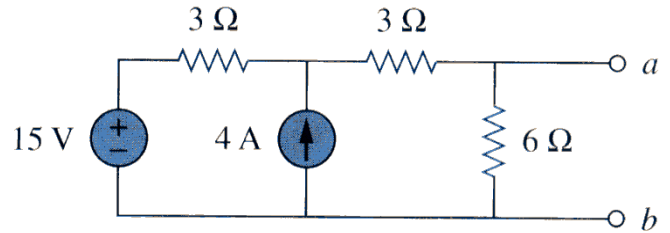

Put your answer here:
I_{ab} =

Problem 2:

a) For the circuit shown below, find the value of the resistor to be connected between terminals a-b such that maximum power is transferred to it.

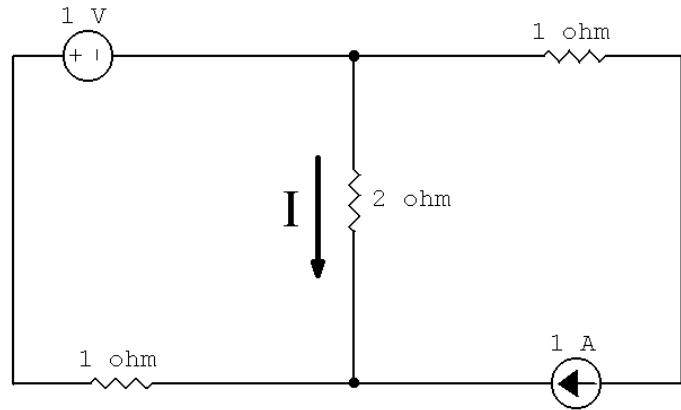b) Determine the value of the maximum power that can be transferred to the resistor found in part a

.

Put your answers here:

$R_L =$

$P_{RL, \, max} =$

Problem 3:

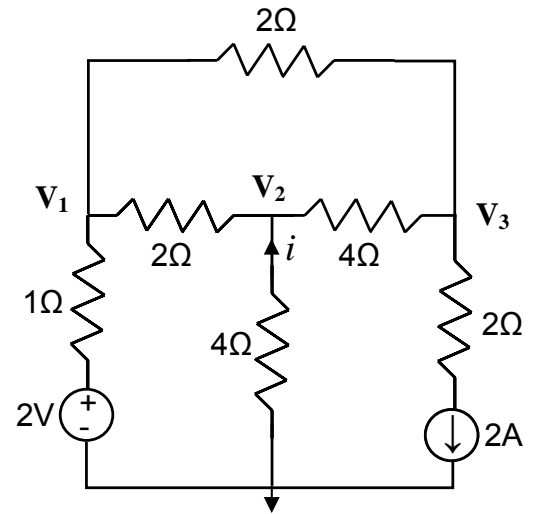Use the principle of superposition to compute the current I in the circuit shown below,

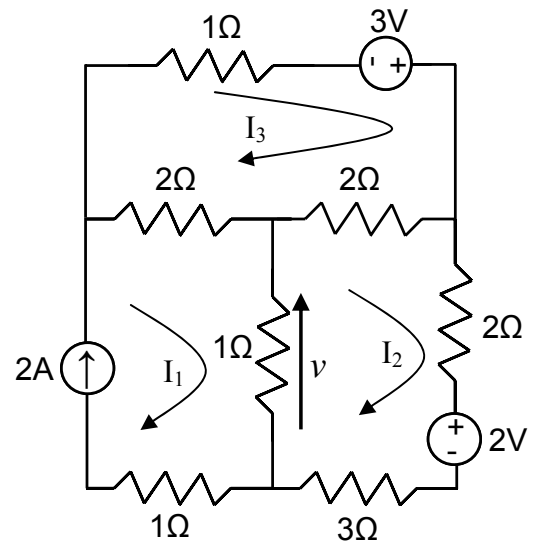Put your answer here
$I =$

Problem 4:

Calculate the current i in the circuit shown below using the node-voltage method.

Answer:
i =

Problem 5:
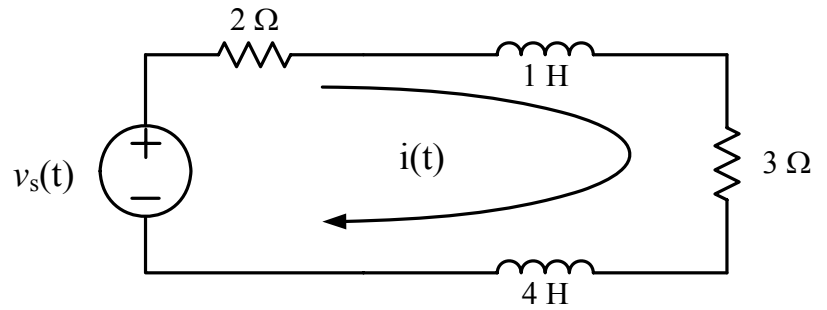Calculate the voltage v in the circuit below using the mesh-current method.

Answer:
v=

Problem 6:

For the circuit shown, find $v_s(t)$ for all t, if $i(t)$ is defined by:

$$i(t) = \begin{cases} t & 0 \le t \le 2 \\ -t+4 & 2 \le t \le 4 \\ 0 & \text{elsewhere} \end{cases}$$

Answer: