King Fahd University of Petroleum & Minerals

Electrical Engineering Department
EE 204 Fundamentals of Electric Circuits
Second Semester (122)

Exam II
Saturday, 13 March 2013
6:30 PM – 8:00 PM

Name: _____

SHOW YOUR WORK FOR ALL QUESTIONS

ID: _____

Section: _____

Serial No.: _____

Instructors

Dr. HARB
Dr. AL-MUHAINI
Dr. HAMMI
Dr. ALAKHDHAR
Dr. HUSSEIN

Problem	Score	Out of
1		10
2		10
3		10
4		10
5		10
Total		50

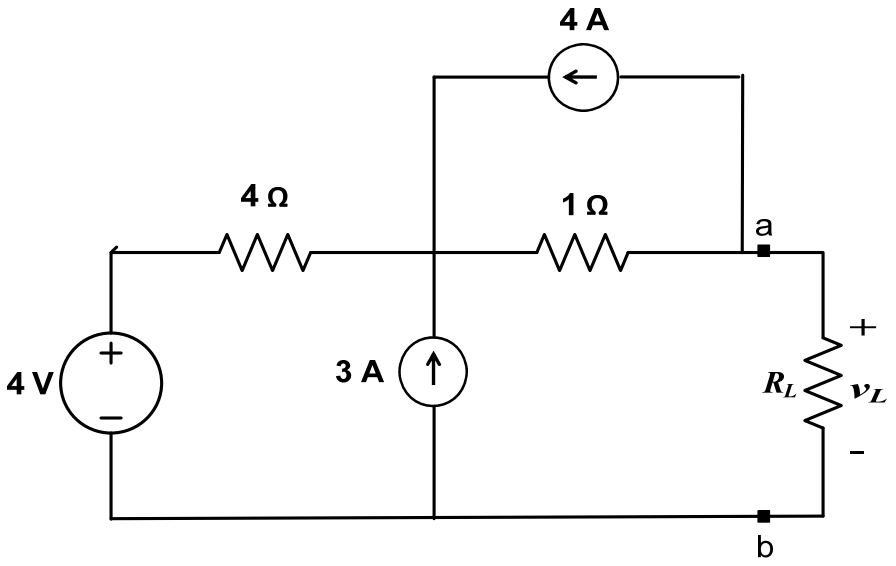
Good Luck!!

Problem 1:

Reduce the circuit connected to the load R_L between terminals a b to its Thevenin's equivalent circuit.

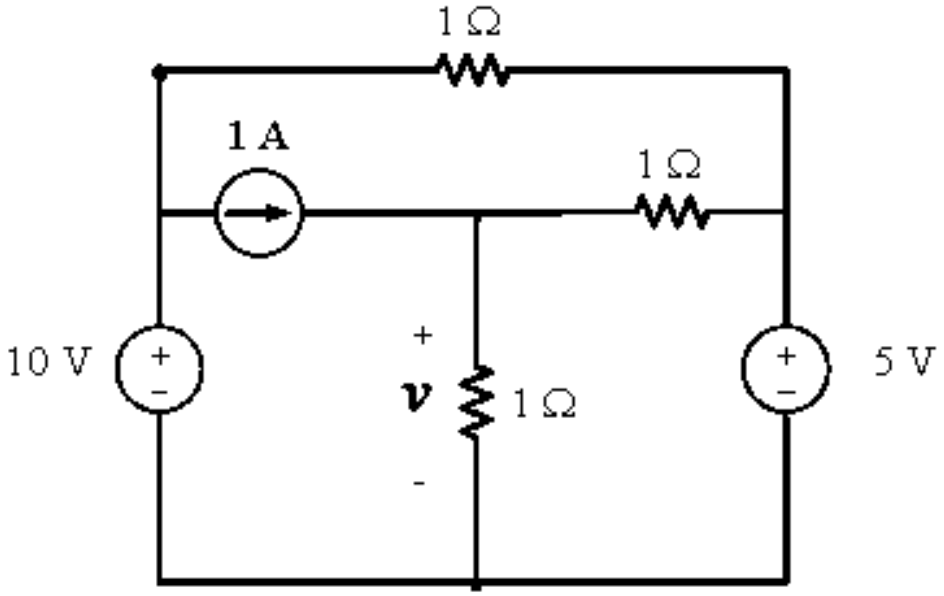
What is the value of v_l for maximum power transfer to the load R_l.

Note that: Your steps and figures should be described clearly in order to get full mark.



Problem 2:

Use the principle of superposition to solve for the voltage *v* in the circuit shown.



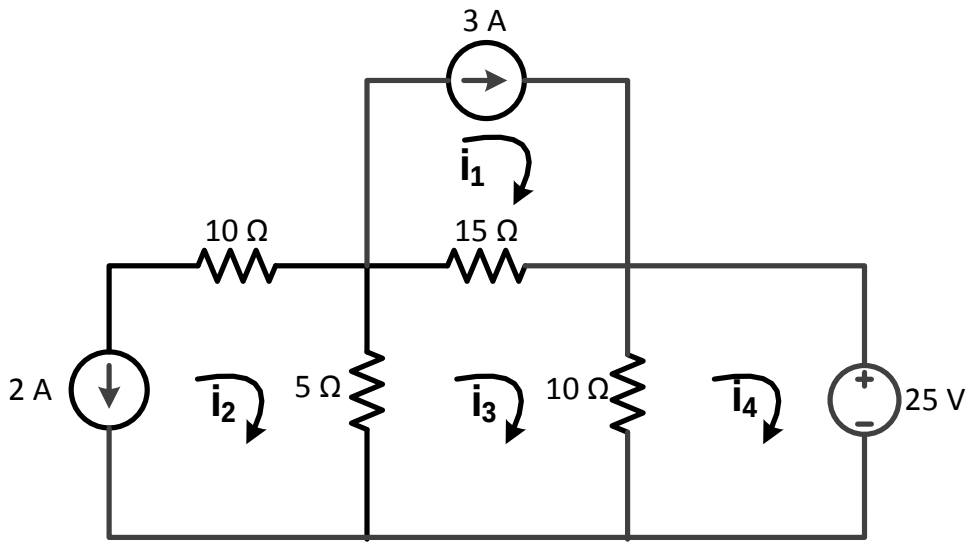
Problem 3:

For the circuit show

a) Write the mesh equations for i_1, i_2, i_3, and i_4.

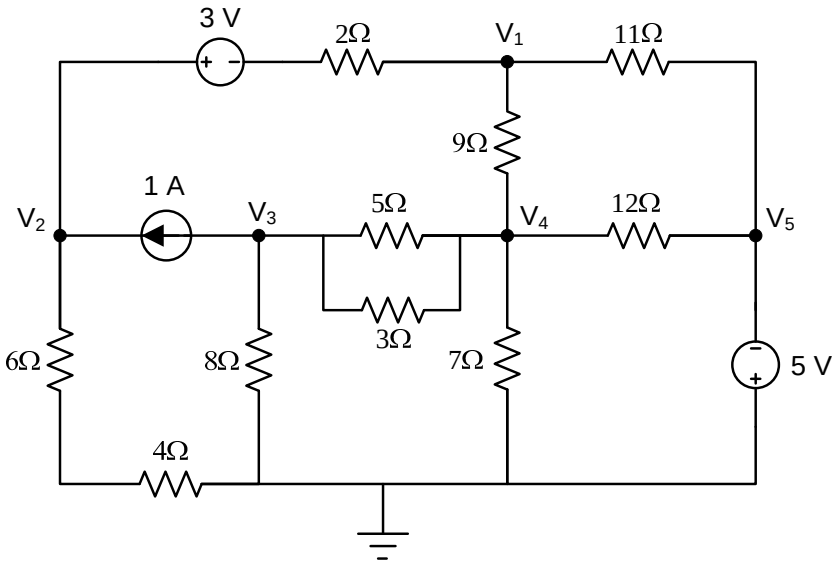
b) Solve for i_1, i_2, i_3, and i_4.

c) Calculate the power supplied by the 3 A current source.



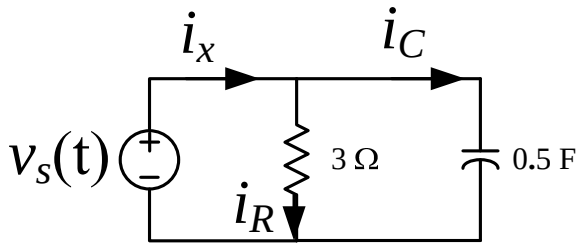
Problem 4:

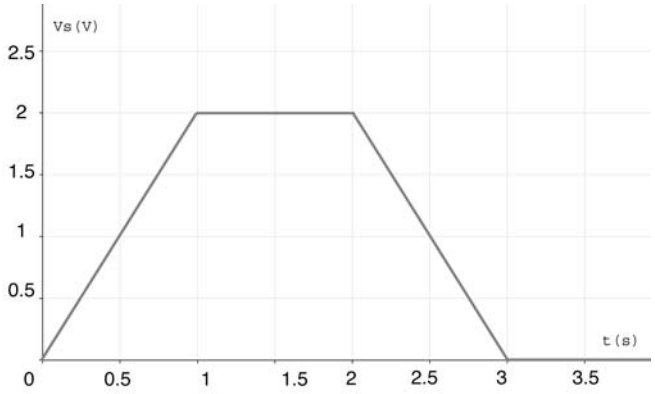
Write the node voltage equations for the circuit below. (Do not solve the equations)



Problem 5:

a) For the shown circuit:
   i. Draw i_R (t) against time from t=0 to 3.5s
   ii. Draw i_C (t) against time from t=0 to 3.5s
   iii. Determine i_x (t) at t= 1.5s
   iv. Determine the energy W(t) stored in the capacitor at t = 1.5s





b) Find the equivalent capacitance between terminals a and b for the following circuit