King Fahd University of Petroleum & Minerals
Electrical Engineering Department

EE204 : Fundamentals of Electric Circuits

Semester 101

Second Major Exam

Time : 1 hr 30 min

Section No. _____

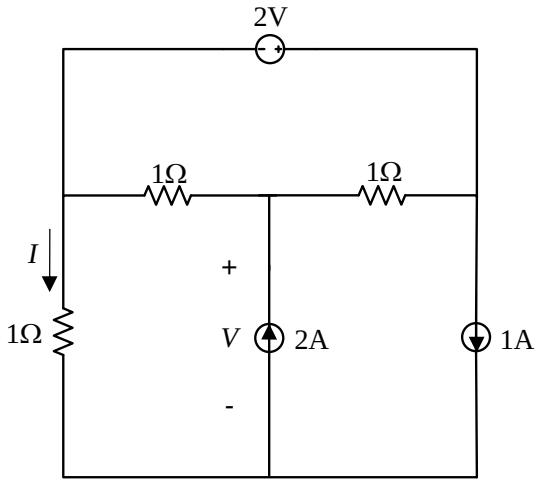
Student Name _____

Student ID _____

Q#1	10	
Q#2	10	
Q#3	10	
TOTAL	30	

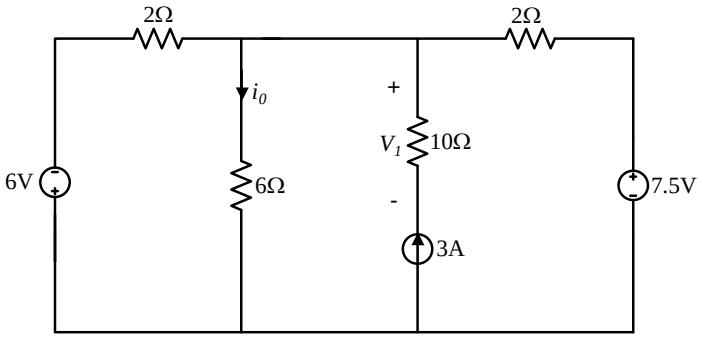
Problem I (Part A): (5 points)

Use the node voltage method (nodal analysis) to compute the current I and the voltage V in the circuit shown below.



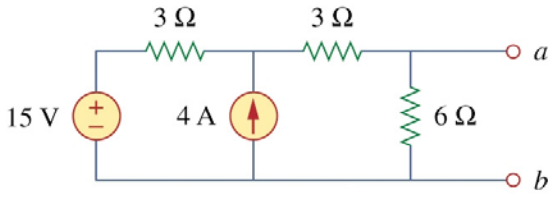
Part 1 (Part B): (5 points)

In the circuit below, use the superposition method to calculate the current i_0 and the voltage V_1. (Draw the circuit at each step).



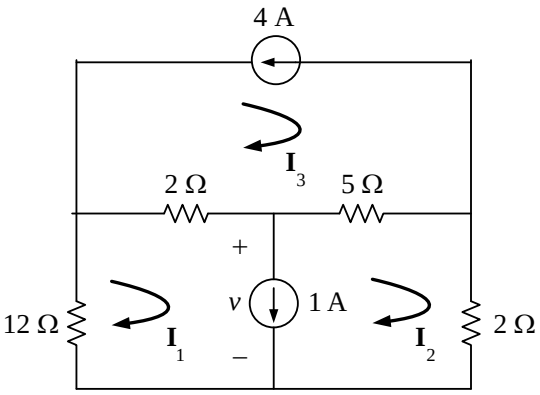
Problem 2 (Part A): (5 points)

Find the Norton Equivalent circuit between terminals a-b. Draw this equivalent circuit.



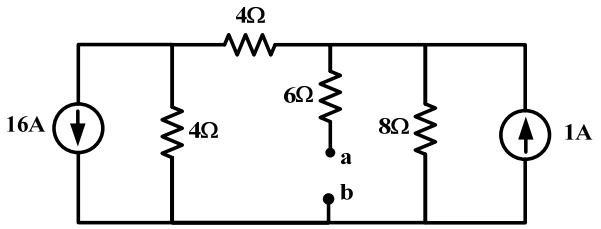
Problem 2 (Part B): (5 points)

Use mesh current analysis technique to find the voltage v.



Problem 3 (Part A): (5 points)

Find the Thevenin's equivalent circuit between terminals a-b. Draw this equivalent circuit.



Problem 3: (part B) (5 points)

For the above circuit, find:

1. The value of the resistor *R* that when placed between a-b will result in maximum power transfer.
2. What is this maximum power?