King Fahd University of Petroleum & Minerals

Electrical Engineering Department
EE 204 Fundamentals of Electric Circuits
First Semester (111)

Exam I
Wednesday, 12 October 2011
6:00 PM – 7:30 PM

Name: _____

ID: _____

Section: _____

Instructors

Dr. S. AL-AHMADI
Dr. M BIN SAEED
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Dr. O. HAMMI

Problem	Score	Out of
1		10
2		10
3		10
Total		30

Good Luck!!

Problem 1

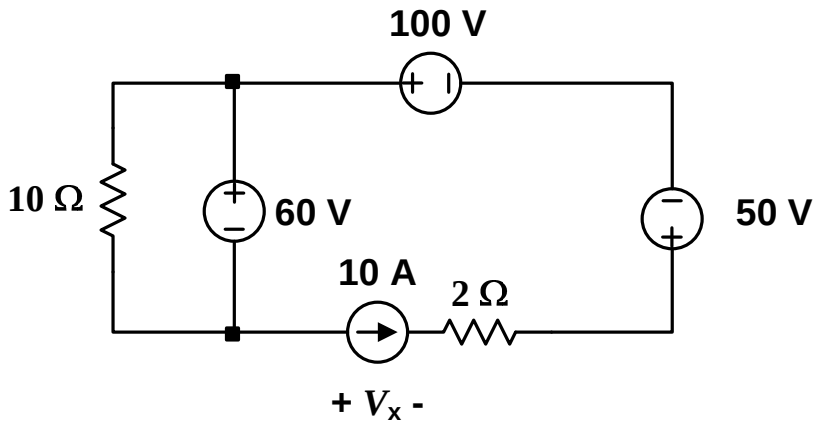
For the circuit shown,

a) (5pts.) Determine the voltage *V*x.

b) (4pts) Calculate the power absorbed by the 60V voltage source.

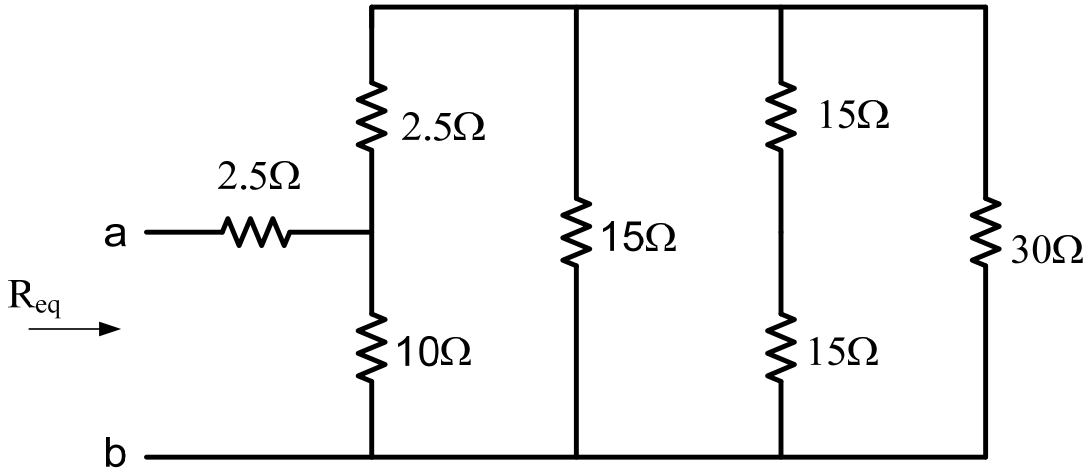
c) (1pt.) Is the 50V voltage source supplying or absorbing power?

a) Vx =
b) P_{60V} =
c) The 50V voltage source is : (**circle the correct answer**) **supplying** **absorbing**



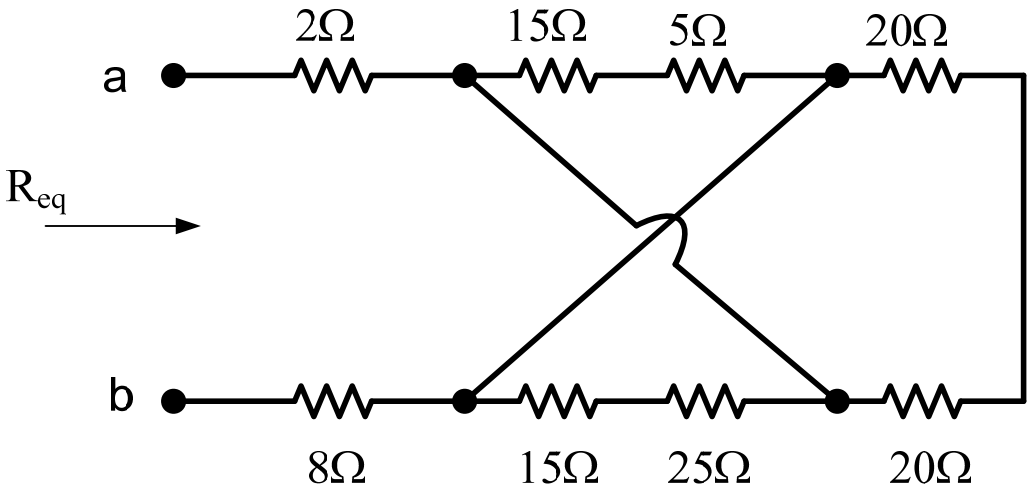
Problem 2

a) (5 pts.) For the circuit shown below, determine the equivalent resistance R_{eq} between the terminals a and b.



R_{eq} =

b) (5 pts.) For the circuit shown below, determine the equivalent resistance R_{eq} between the terminals a and b.



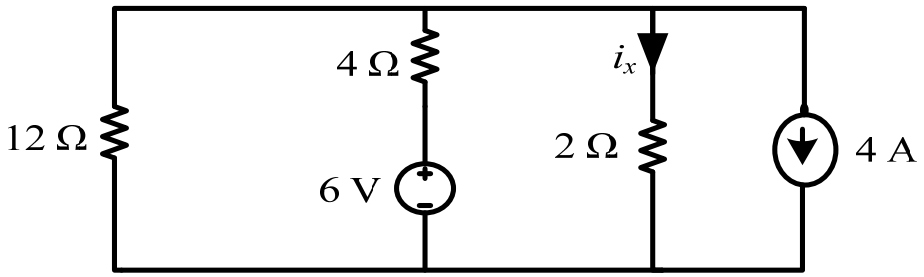
R_{eq} =

Problem 3

a)

1. (2 pts.) Use **source transformation** to reduce the circuit shown to a single-node pair circuit**,** then

2. (2 pts.) use **current division rule (CDR)** in the circuit obtained in part (1) to determine the current i_x.

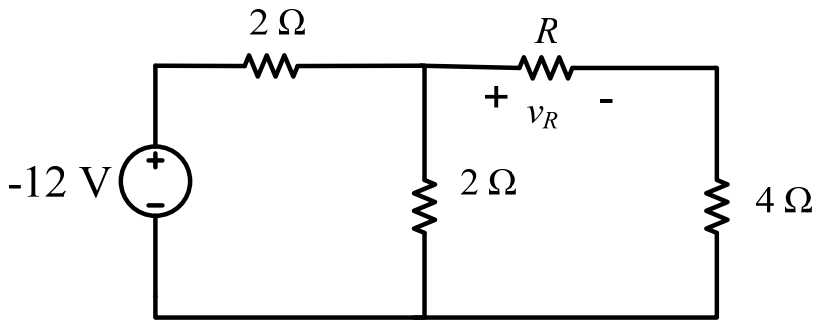


i_x =

b)

1. (3 pts.) Use **source transformations** to reduce the circuit shown to a single loop circuit, then

2. (3 pts.) use **voltage division rule (VDR)** in the circuit obtained in part (1) to determine the value of the resistor *R* such that $v_R = -4$ **V.**



R =