ET 110 – Introduction to circuit analysis

**Pre-Exam2 Due date: Wednesday 10/26/16**

Student's name: _____

Academic dishonesty is prohibited in The City University of New York and is punishable by penalties, including failing grades, suspension, and expulsion. Some examples of academic dishonesty are cheating, plagiarism, Internet plagiarism, obtaining unfair advantage, falsification of records and official documents, and collusion.

Instruction

✓ Show all work and calculation

✓ Round off all your answer in engineering notation to the hundredth place.

✓ All answers should have units, otherwise points will be deducted.

✓ Write your answer in the underline and box/circled your answer in your calculations.

Multiple choices: circle only ONE answer

For the following network (2 points each):
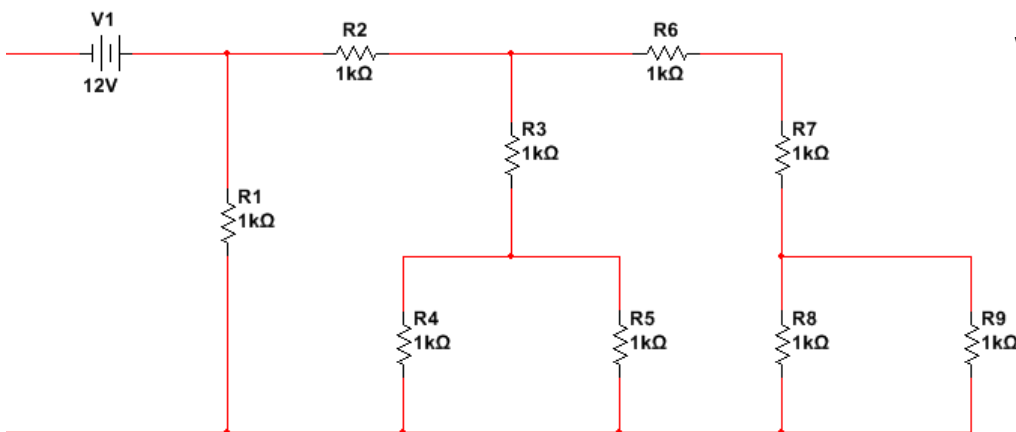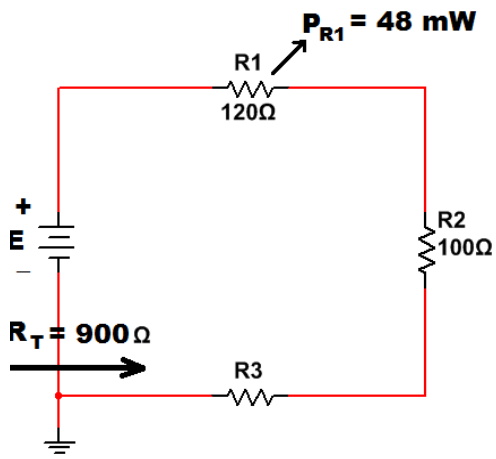

Which resistor will have 12 V drop?

a. All of them
b. R4
c. R3
d. R2
e. R1

Which of the following resistors share *the same current*?

a. R3 and R4
b. R1 and R2
c. R2 and R3
d. R6 and R7
e. R7 and R8
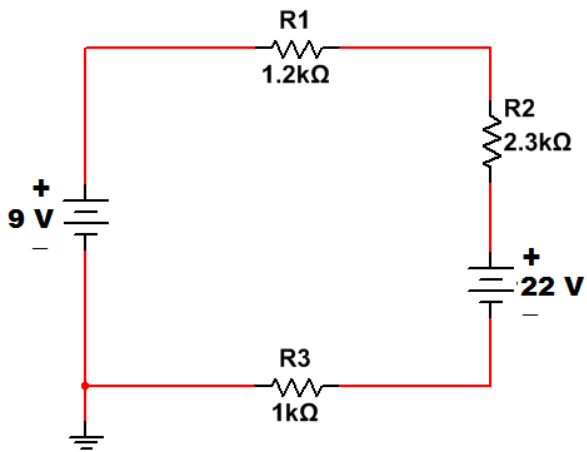
Which of the following resistors share *the same voltage*?

a. R1 and R3
b. R1 and R4
c. R3 and R7
d. R5 and R8
e. R8 and R9

P_{R1} = 48 mW

R1
$\wedge\wedge\wedge$
120Ω

R2
100Ω

+
E

−

R_T = 900Ω

R3
$\wedge\wedge\wedge$

Question 1

For the following circuit, solve for:

    a.   Resistance in R_3 (3 points) _____

    b.   Voltage source, E (4 points)_____

R1
$\wedge\wedge\wedge$
1.2kΩ

R2
2.3kΩ

+
9 V

−

+
22 V
−

R3
$\wedge\wedge\wedge$
1kΩ

Question 2

For the following circuit, solve for:
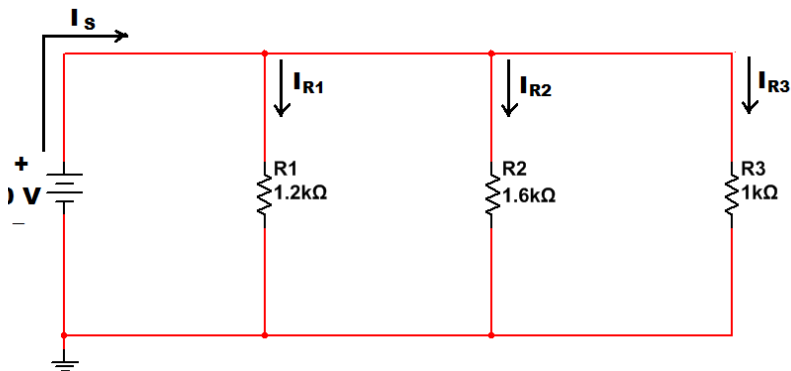
    a.   Current source, I_S (4 points) _____

    b.   Voltage drop in R_1, V_{R1} (3 points)_____

    c.   Voltage drop in R_2, V_{R2} (3 points)_____

    d.   Voltage drop in R_3, V_{R3} (3 points)_____

    e.   Show the direction of the current within the closed path and

the polarity of each voltage drop for each resistor in the series circuit (2.5 points)
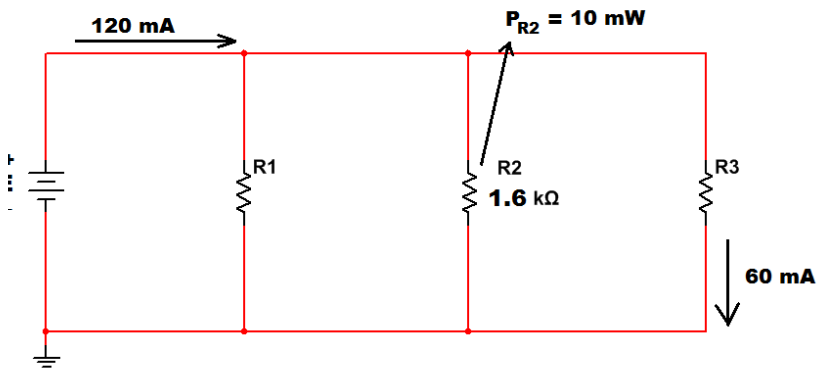
Question 3

For the following circuit:

120 mA

$P_{R2} = 10$ mW

R1

R2
1.6 kΩ

R3

60 mA

a. Voltage source, E (4 points)_____

b. Total resistance, R_T (3 points) _____

c. Resistance in R_3 (3 points) _____

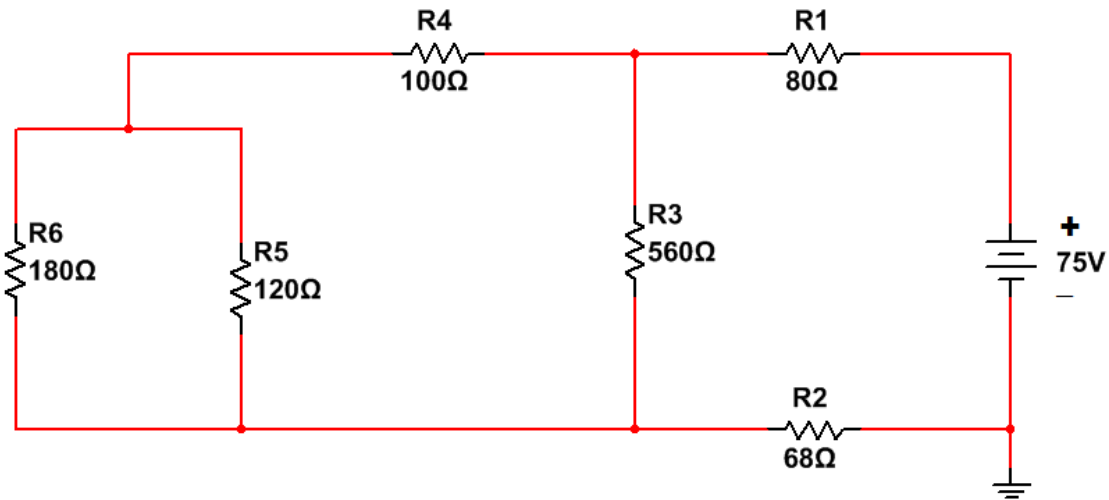d. Resistance in R_1 (3 points) _____

Question 4

For the following circuit, find:

I_S

I_{R1}

I_{R2}

I_{R3}

+
) V
−

R1
1.2kΩ

R2
1.6kΩ

R3
1kΩ

a. Total resistance, R_T (4 points)_____

b. Current source, I_S (3 points) _____

c. Current through R_3 (3 points) _____

Question 5

For the following series-parallel circuit, find

R4 100Ω · R1 80Ω · R3 560Ω · R6 180Ω · R5 120Ω · R2 68Ω · 75V

a. Total resistance, R$_T$ (6 points)_____

b. Voltage in R$_1$, V$_{R1}$ (2 points)_____

c. Voltage in R$_2$, V$_{R2}$ (2 points)_____

d. Voltage in R$_3$, V$_{R3}$ (2 points)_____

e. Voltage in R$_4$, V$_{R4}$ (3 points)_____

f. Voltage in R$_5$, V$_{R5}$ (3 points)_____

g. Voltage in R$_6$, V$_{R6}$ (2 points)_____

h. Current through R$_1$, I$_{R1}$ (2 points)_____

i. Current through R$_2$, I$_{R2}$ (2 points)_____

j. Current through R$_3$, I$_{R3}$ (2 points)_____

k. Current through R$_4$, I$_{R4}$ (3 points)_____

l. Current through R$_5$, I$_{R5}$ (3 points)_____

m. Current through R$_6$, I$_{R6}$ (3 points)_____