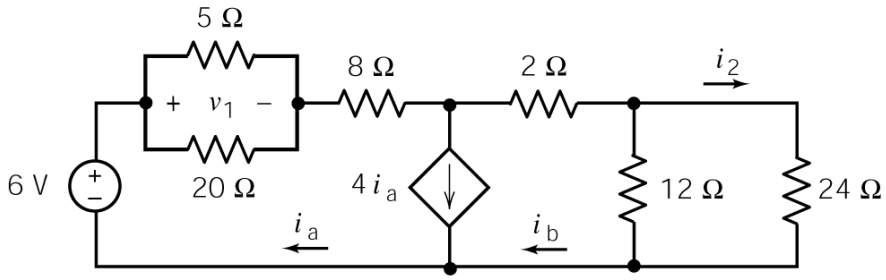
ES 250 First Midterm Practice Exam 2

1.



i_a = _____A, i_b = _____A,

i_2 = _____A,

and

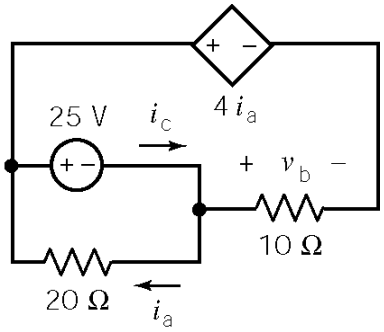
v_1 = _____V

2.

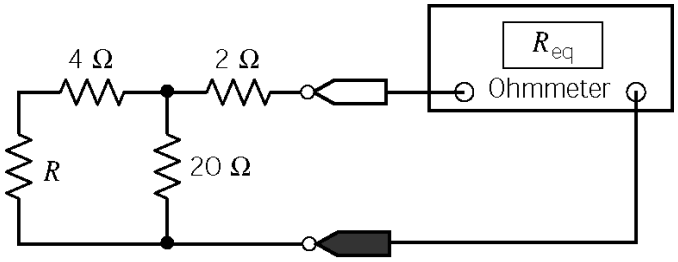
The current in the 20-Ω resistor is i_a = _____A.

The voltage across the 10-Ω resistor is v_b = _____V.

The (independent) voltage source current is i_c = _____A.



3.

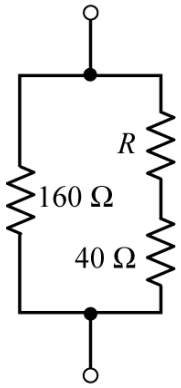


The Ohmmeter measures equivalent resistance.

a. To cause R_{eq} = 12 Ω, choose R = _____Ω.

b. If R = 14 Ω then R_{eq} = _____Ω.

4.



Consider this combination of resistors. Let R_p denote the equivalent resistance.

(a) Suppose 40 Ω ≤ R ≤ 400 Ω. Determine the corresponding range of values of R_p:

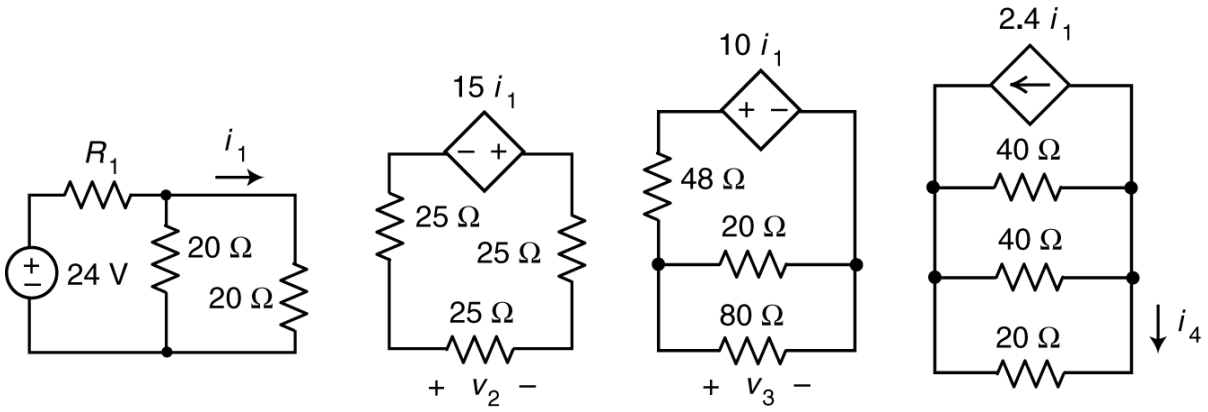
_____ Ω ≤ R_p ≤ _____ Ω

(b) Suppose instead R = 0 (a short circuit). Then R_p = _____ Ω

(c) Suppose instead $R = \infty$ (an open circuit). Then R_p = _____ Ω

(d) Suppose instead the equivalent resistance is R_p = 80 Ω. Then R = _____ Ω

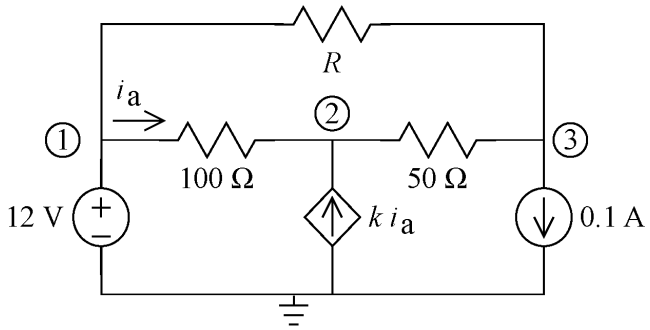
5.



Here's a single circuit drawn in four parts for convenience. The four parts are connected by the dependent sources. Given that $i_1 = 0.8$ A, determine the values of R_1, v_2, v_3, and i_4.

$R_1 =$ _____Ω, $v_2 =$ _____V, $v_3 =$ _____V and $i_4 =$ _____A.

6.



Encircled numbers are node numbers. The corresponding node voltages are:

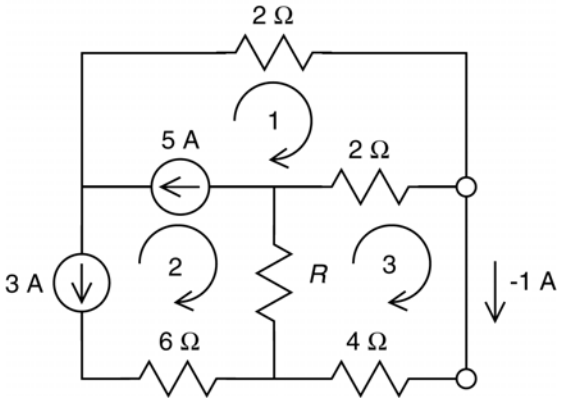
$v_1 = 12$ V, $v_2 = 10.5$ V and $v_3 = 6$ V

The value of the gain of the CCCS is $k =$ _____ A/A.

The resistance of the resistor at the top of the circuit is $R =$ _____Ω. (Round to an integer.)

The power supplied by the independent (0.1 A) current source is _____W.

7.



Let i_1, i_2 and i_3 denote the mesh currents in meshes 1, 2 and 3, respectively.

Determine the values of these mesh currents:

$i_1 =$ _____A and $i_2 =$ _____A

Determine the value of the resistance R:

$R =$ _____ Ω