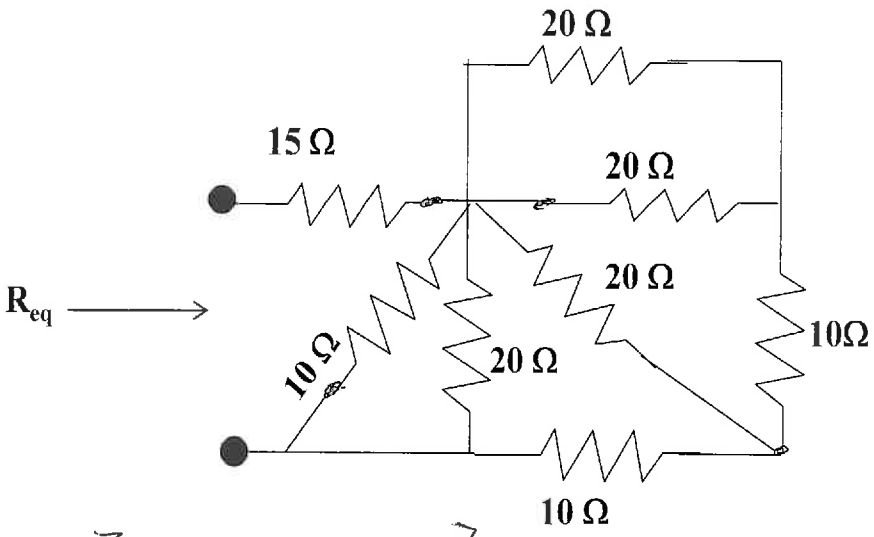
EECS 215-002 Quiz 2 Fall 2017

Name : **ID #**

Problem # 1(5 Points)

Find R_{eq} by combining the resistors.



$$R_{eq_1} = \left\{\left[(20\Omega \,||\, 20\Omega) + 10\Omega\right] || \, 20\Omega + 10\Omega\right\}$$

$$= (10+10) || \, 20 + 10\Omega = 20\Omega$$

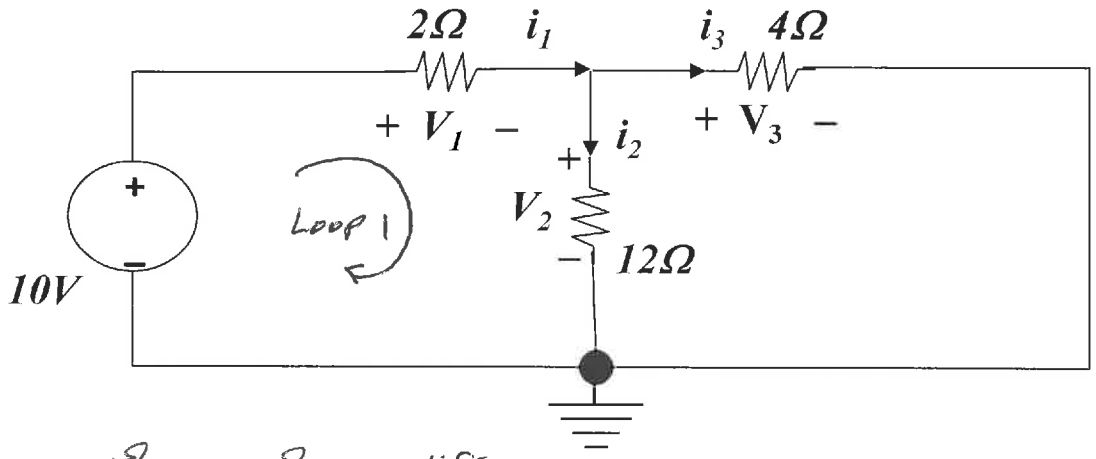
$$R_{eq} = \left[(R_{eq_1} || \, 20) || \, 10\Omega\right] + 15\Omega$$

$$= (20 || \, 20) || \, 10\Omega + 15\Omega$$

$$= 5\Omega + 15\Omega = 20\Omega$$

Problem # 2

Find all the currents and voltages in this circuit using KVL / KCL and any resistance combinations.



$R = 4^{\Omega} \,||\, 12^{\Omega} = \frac{48}{16} = 3\,\Omega$

$I_1 = \frac{10\,V}{2^{\Omega} + 3^{\Omega}} = 2\,A$ Ohms law in 2^{Ω} resistor

$V_1 = 2^{\Omega} \times 2^{A} = 4\,V$

$V_1 + V_2 - 10 = 0$ in Loop 1

$V_2 = 10 - 4 = 6\,V$, $V_3 = V_2 = 6\,V$

$I_2 = \frac{6\,V}{12\,\Omega} = 0.5\,A$

$I_3 = I_1 - I_2 = 2 - 0.5 = 1.5\,A$ KCL