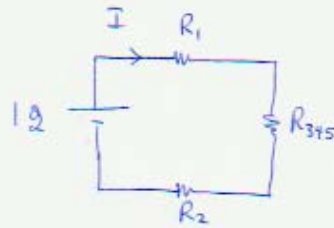Instructor: Dr. A. Mekki

Name: _____ Key _____   Id: _____

(a) Find the equivalent resistance for the circuit shown in the figure with $R_1 = R_2$
= 2 Ω, $R_3 = R_4 = 7\,\Omega$, $R_5 = 5\,\Omega$ and $\varepsilon = 12$ V.

R_3, R_4 and R_5
are in parallel

12V $R_{345} = 2.1\,\Omega$

$R_{eq} = 6.1\,\Omega$
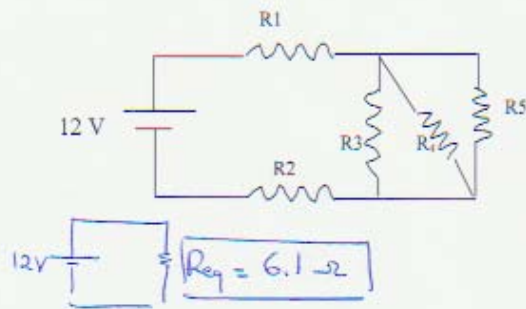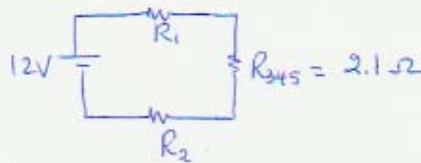
(b) What is the current in the resistance R_5?

$I = \dfrac{12}{6.1} = 1.96\,A$

$V_{R_1} = I R_1 = 3.93\,V = V_{R_2}$

$V_{R_{345}} = 12 - 2 \times 3.93 = 4.14\,V$

$\Rightarrow$ R_3, R_4 and R_5 are in parallel

$\Rightarrow$ $V_{R_5} = 4.14\,V$ $\Rightarrow$ $I_{R_5} = \dfrac{V_{R_5}}{R_5} = \dfrac{4.14}{5} = \boxed{0.82\,A}$