EE 10 – Circuit Analysis I
Homework #8

1. Assume the circuit is in steady state at $t = 0^-$. Find $v(t)$, $t > 0$.

\[ \begin{array}{c}
\text{2A} \\
\downarrow \\
12\Omega \\
\downarrow \\
\cdots \\
\downarrow \\
6\Omega \\
\downarrow \\
\cdots \\
\downarrow \\
20\Omega \\
\downarrow \\
\cdots \\
\downarrow \\
\frac{1}{2}\ H \\
\downarrow \\
\cdots \\
\downarrow \\
5\Omega \\
\downarrow \\
\text{20V} \\
\end{array} \]

2. Find $v_o(t)$, $t > 0$.

\[ \begin{array}{c}
4V \\
\downarrow \\
\text{10K\Omega} \\
\downarrow \\
\cdots \\
\downarrow \\
20K\Omega \\
\downarrow \\
\cdots \\
\downarrow \\
25mF \\
\downarrow \\
\cdots \\
\downarrow \\
\text{v}_o \\
\end{array} \]

3. Assume $v(0) = 1V$. Find $v_o(t)$, $t > 0$.

\[ \begin{array}{c}
4V \\
\downarrow \\
\text{10K\Omega} \\
\downarrow \\
\cdots \\
\downarrow \\
20K\Omega \\
\downarrow \\
\cdots \\
\downarrow \\
20\mu F \\
\downarrow \\
\cdots \\
\downarrow \\
\text{v} \\
\end{array} \]
4. Assume the circuit is in steady state at $t = 0^-$. Find $v_o(t)$, $t > 0$.

![Circuit Diagram 1](image1.png)

5. Find $v_o(t)$.

![Circuit Diagram 2](image2.png)

6. The switch moves from a to b at $t = 0$. Assume the circuit is in steady state at $t = 0^-$. Find $v_o(t)$, $t > 0$.

![Circuit Diagram 3](image3.png)

7. Simulate the circuit in problem 5 using PSPICE. Use a VPULSE voltage source with the PW set to 1 second and PER set to 10 seconds to simulate this single pulse. Turn in the PSPICE schematic and a plot of $v_o(t)$, $0 < t < 8$ seconds.

8. Simulate the circuit in problem 3 using PSPICE. Use the uA741 op amp. Make sure your DC power supplies are large enough to accommodate the output that you expect. Turn in the PSPICE schematic and a plot of $v_o(t)$, $t > 0$. 