Indian Institute of Technology, Delhi
EEL202: Circuit Theory
Minor 1, September 2, 2013

1. In the circuit of Fig. 1, $V_A - V_B$ is 6 Volts. Find out the value of $V_C - V_D$. (5 marks)

2. The circuit in Fig. 2 is a topology for a DC-DC converter. At time, $t = 0^-$, the voltage $v(t)$ across the capacitor is -5 Volt. Determine $v(1\ sec)$. (8 marks)

3. The circuit in Fig. 3 is called a twin-T network. Use your choice of 2-port network parameters to find the system transfer function, V_{out}/V_{in}. Use the Laplace domain model of $1/sC$ for every capacitor.
Hint: Break up the network into two, find 2-port parameters of each of the pieces. Then combine the 2-port parameters. (2+2+2+1 marks)

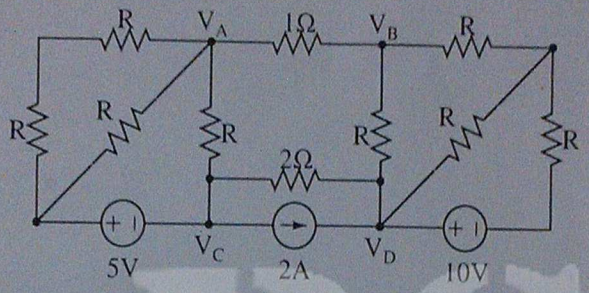

Figure 1: Circuit for Q1

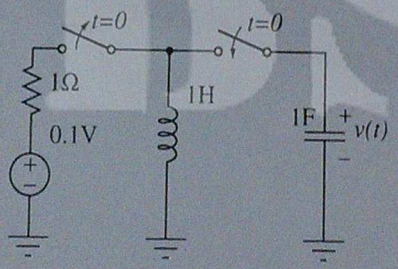

Figure 2: DC-DC converter

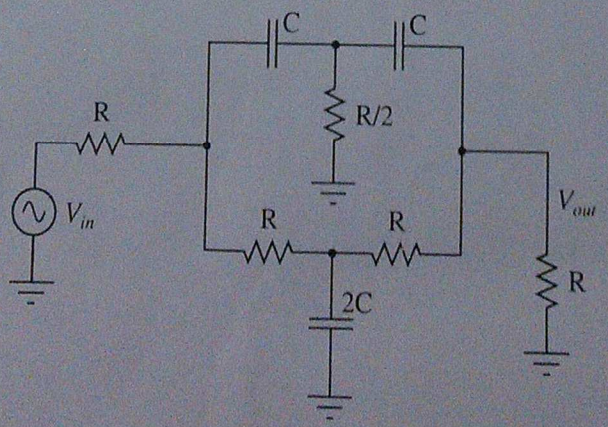

Figure 3: Twin-T network