ECE113: Basic Electronics (BE)

Winter 2024

Quiz-2

Date: **18-April-2024** Duration: **30 Minutes** Total Points: **24 Points**

[CO3] Q1: [6 Points] In the given following circuit (Figure-1), the initial value of voltage $[\boldsymbol{V_C(0)}]$ across capacitor is **6V**. Find the value of energy absorbed by the resistor in the time interval $0 \le t < \infty$.

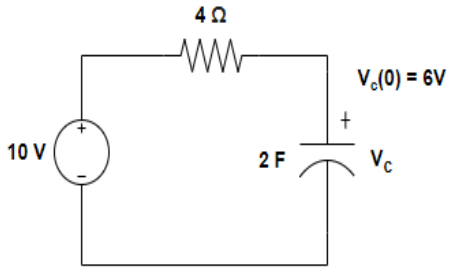

Figure 1

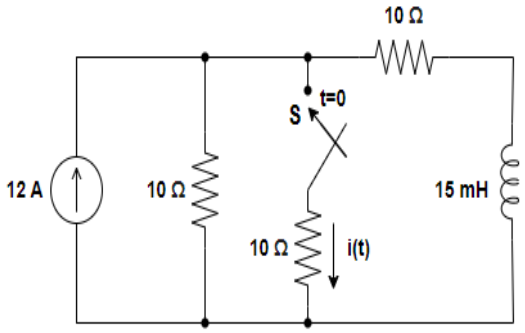

Figure 2

[CO3] Q2: [4 Points] In the given following circuit (Figure-2), the switch ***S*** is open for a long time and is closed at t=0. Find the value of current $\boldsymbol{i(t)}$ for $t \ge 0^+$.

[CO3] Q3: [6 Points] In the given following circuit (Figure-3), the switch ***S*** was on position ***A*** for a long time, and is moved to position ***B*** at time t=0 sec. Find the value of current $\boldsymbol{i(t)}$ for $t > 0$.

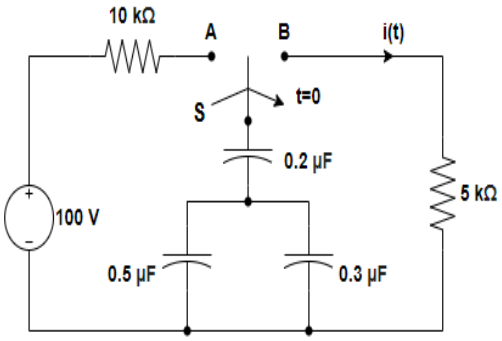

Figure 3

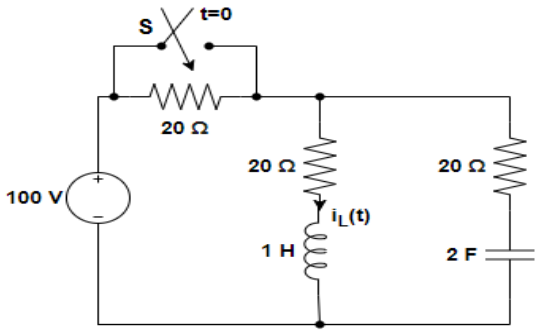

Figure 4

[CO3] Q4: [4 Points] In the given circuit (Figure-4), find the rate of change of current across the inductor at time $t=0^+$.

[CO3] Q5: [4 Points] Find Time constant (***T***) of the circuit shown in Figure-5.

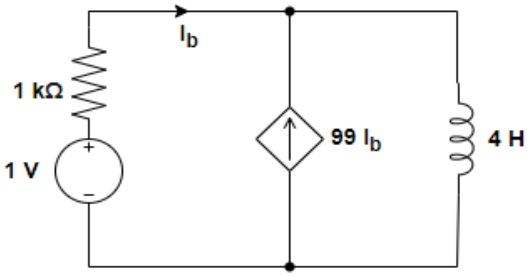

Figure 5