

LAHORE UNIVERSITY OF MANAGEMENT SCIENCES
Department of Electrical Engineering

EE240 Circuits I
Quiz 02 - Section 1

Name: _____

Campus ID: _____

Total Marks: 10

Time Duration: 15 minutes

Question 1 (6 marks)

Consider a circuit where the DC voltage source of $5V$ is connected with a series combination of a $2\ \Omega$ resistor and $1H$ inductor through the switch. Assume that the switch is initially open and is closed at $t = 0$ and the inductor is not carrying any current before the switch is closed, that is, $i(t) = 0$ for all $t < 0$.

- (a) [1 mark] Draw the circuit and indicate the current $i(t)$ through the circuit and the voltages $v_R(t)$ and $v_L(t)$ across the resistor and inductor respectively.
- (b) [5 marks] Plot the waveforms of the voltage $v_R(t)$ and $v_L(t)$.

Question 2 (4 marks)

The voltage $v_c(t)$ across the $0.5F$ capacitor is shown in the figure below. Determine and plot the current through the capacitor for $0 \leq t \leq 5$. Determine the energy stored in the capacitor at $t = 2$ s.

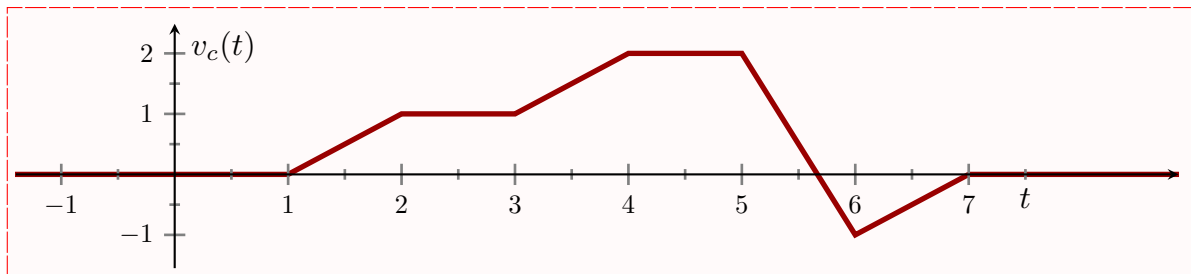


Figure 1: Voltage across the Capacitor.