LAHORE UNIVERSITY OF MANAGEMENT SCIENCES
Department of Electrical Engineering

EE240 Circuits I
Quiz 02

Total Marks: 10
Time Duration: 20 minutes

Question 1 (4 marks)

The voltage $v_c(t)$ through the capacitor of capacitance $\frac{1}{2}F$ is shown in Figure 1 below. Determine the current through the capacitor. You must show working to support your answer. Also plot the current for $1 \leq t \leq 5$.

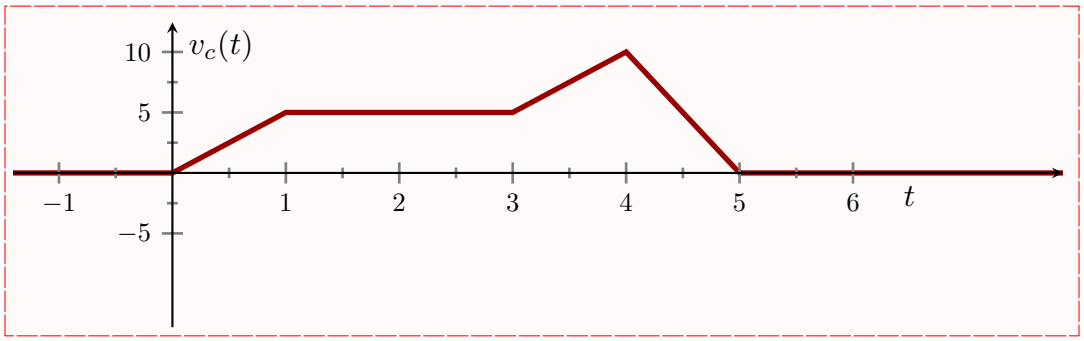
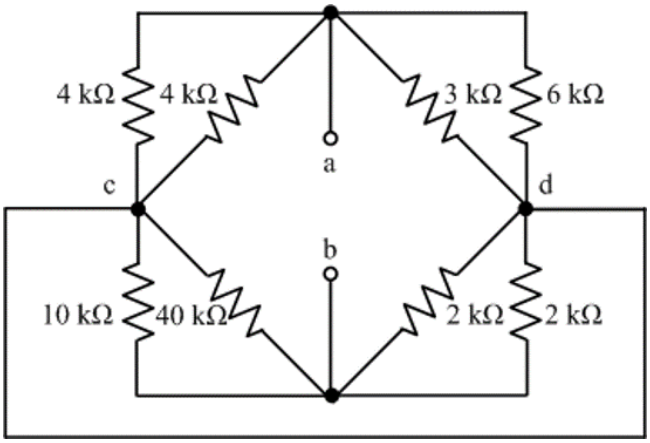


Figure 1: Voltage across the Capacitor.

(b) [1 mark] Determine the energy stored in the capacitor at $t = 4$.

Question 2 (4 marks)

Determine the equivalent resistance across terminals a and b. **Hint:** Note that the points c and d are connected, so these two points represent one point (at the same potential).



Question 3 (2 marks)

The current through the $0.5H$ inductor is given by $i_L(t) = 2\cos(\omega_o t)$.

(a) [1 mark] Evaluate the expression for the voltage $v_L(t)$ across inductor.

(b) [1 mark] Using the result of part(a), determine whether the inductor behave as open-circuit or short-circuit for the case when $\omega_o \to 0$ (DC case).