LAHORE UNIVERSITY OF MANAGEMENT SCIENCES
Department of Electrical Engineering

EE240 Circuits I
Quiz 02 - Section 2

Name: _____

Campus ID: _____

Total Marks: 10
Time Duration: 15 minutes

Question 1 (4 marks)

The current entering the positive terminal of the inductor is $i(t) = 3(1 - e^{-t})$ A for $t \geq 0$ and $i(t) = 0$ A for $t < 0$.

(a) [2 marks] Determine the voltage across the inductor. Give an expression.

(b) [1 mark] Determine the power absorbed by the inductor.

(c) [1 mark] Determine the energy absorbed by the inductor in 2 seconds.

Question 2 (6 marks)

The voltage across the $0.5H$ inductor is given by $v_L(t) = 4\sin(\omega_o t)$.

(a) [2 marks] Evaluate the expression for the current $i_L(t)$ through the inductor.

(b) [2 marks] Plot the current, voltage and power versus time for $0 \leq t \leq 4\pi/\omega_o$. You must appropriately label the plots.

(c) [1 mark] How does the amplitude of the current change with the increase in the frequency ω_o?

(d) [1 mark] How much energy (average power) over one period is stored in an inductor?