LAHORE UNIVERSITY OF MANAGEMENT SCIENCES
Department of Electrical Engineering

EE240 Circuits I
Quiz 01 Solutions

Question 1 (4 marks)

Determine the total charge entering a terminal of an electrical component between $t = 1\,\text{s}$ and $t = 2\,\text{s}$ if the current passing the terminal is $i(t) = 3t^2 - t\,\text{A}$.
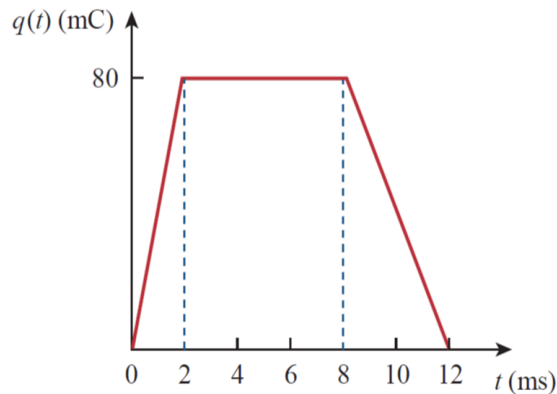
Solution: The total charge is given by

$$q = \int_1^2 (3\tau^2 - \tau)d\tau = 5.5\,C$$
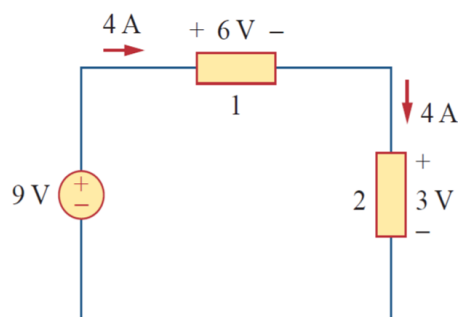
Question 2 (3 marks)

Find the current at $t = 6\,\text{ms}$ and at $t = 10$ ms if the charge entering a certain element is shown below.

Solution: We know that $i(t) = \frac{dq}{dt}$ and therefore $i(6\,ms) = 0$ and $i(10\,ms) = 0$.

Question 3 (3 marks)

For the circuit given below, calculate the power dissipated or supplied by each element.

Solution: Power dissipated by element 1 is $24\,\text{W}$, power dissipated by element 2 is $12\,\text{W}$ and the power dissipated by voltage source is -36 W.