

LAHORE UNIVERSITY OF MANAGEMENT SCIENCES
Department of Electrical Engineering

EE240 Circuits I
Quiz 04 = Section 1

Name: SOLUTION

Campus ID: _____

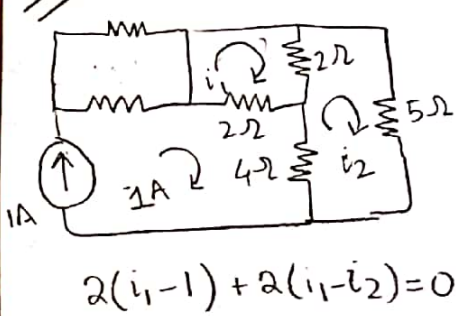
Total Marks: 10

Time Duration: 20 minutes

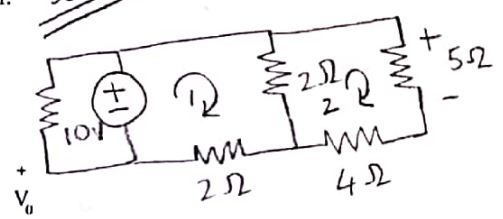
Question 1 (5 marks)

For the circuit given below, determine V_o using superposition theorem.

using 1A source:



using 10V source:



$$2i_1 + 2i_1 - 2i_2 = 10V$$

$$4i_1 - 2i_2 = 10V \quad (1)$$

$$-2i_1 + 2i_2 + 4i_2 + 5i_2 = 0$$

$$-2i_1 + 11i_2 = 0 \quad (2)$$

Question 2 (5 marks)

Draw the dual of the circuit shown below.

$$4i_1 - 2i_2 = 2 \quad (1)$$

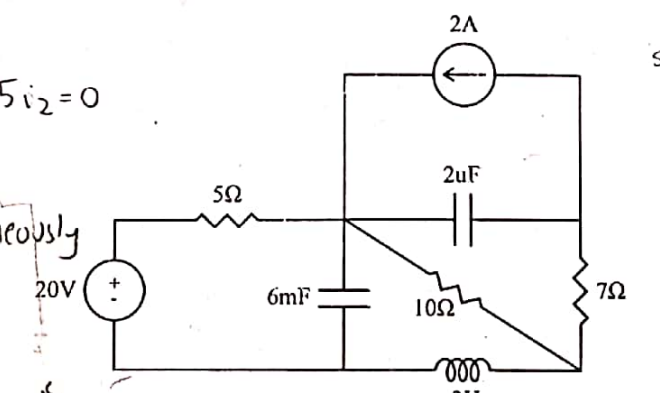
$$-2i_1 + 2i_2 + 4(i_2 - 1) + 5i_2 = 0$$

$$-2i_1 + 11i_2 = 4 \quad (2)$$

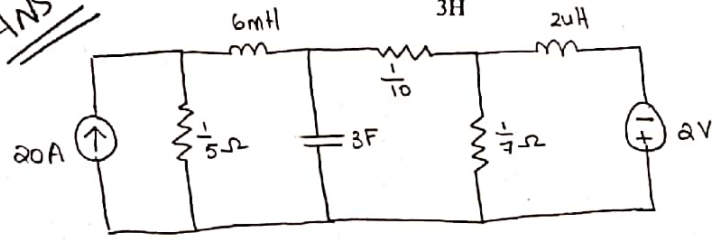
solving (1) & (2) simultaneously

$$i_1 = 0.75A$$

$$i_2 = 0.5A$$



ANS



solving (1) & (2) simultaneously

$$i_1 = 2.75A$$

$$i_2 = 0.5A$$

$$V_o(10V) = 0.5 \times 5$$

$$V_o(10V) = 2.5V$$

$$V_o(1A) = 0.5 \times 5$$

$$V_o(1A) = 2.5V$$

$$V_o = V_o(1A) + V_o(10V)$$

$$V_o = 5V \quad \underline{\underline{ANS}}$$