CASE WESTERN RESERVE UNIVERSITY
Case School of Engineering
Department of Electrical Engineering and Computer Science

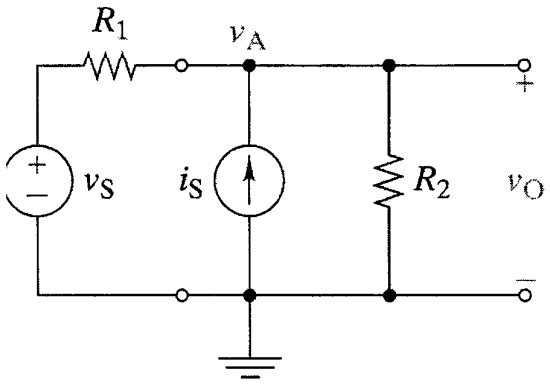
ENGR 210. Introduction to Circuits and Instruments (4)

Quiz No. 4 9/26/03

Name (*Section*): Solutions

PUT ANSWERS IN THE SPACE PROVIDED AND SHOW YOUR WORK

Problem 1 (10 points)
Determine the proportionality factors that relate each independent source to the output v_O, in terms of R_1 and R_2. Then, *given* that $K_1 \equiv (v_O/v_S) = 0.25$ and $K_2 \equiv (v_O/i_S) = 2\ k\Omega$, calculate the value of v_O for specific inputs. Complete the table.



PROP. FACTOR	EXPRESSION
$K_1 \equiv (v_O/v_S)$	$\frac{R_2}{R_1 + R_2}$
$K_2 \equiv (v_O/i_S)$	$\frac{R_1}{R_1 + R_2} \cdot R_2$

voltage divider

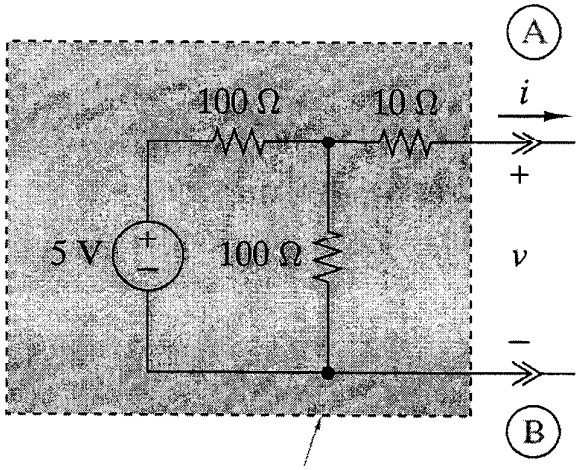
$R_1 \| R_2$

V_S	i_S	OUTPUT FOR $K_1 = .25$, $K_2 = 2\ K\Omega$
0 V	1 mA	2 V
1 V	0 mA	0.25 V
1 V	1 mA	2.25 V

(over)

Problem 2 (10 points)

Find the Thevenin and Norton equivalent circuit parameters for the interface A-B in this circuit. Complete the table.



ELEMENT	VALUE
v_T	2.5 V
R_T	60 Ω
i_N	$\frac{1}{24}$ A
R_N	60 Ω

(over)