D) $R_1 = 50\ \Omega$
$R_2 = 54\ \Omega$
$R_3 = 26\ \Omega$
$R_4 = 76\ \Omega$
$R_5 = 44\ \Omega$
$R_6 = 35\ \Omega$
$R_7 = 89\ \Omega$
$R_8 = 92\ \Omega$

$$R_+ = \left[\left(\left(R_3^{-1}+R_5^{-1}\right)^{-1}+R_2+R_4\right)^{-1} + \left(\left(R_7^{-1}+R_6^{-1}\right)^{-1}+R_8+R_1\right)^{-1}\right]^{-1}$$

$= 78.00\ \Omega$

$V = IR \rightarrow I = V/R_+ = 0.2/78 = 2.56\ mA$

$R_L = 167\ \Omega \qquad I_L = V/R_L = 0.0012\ A$

$R_R = 146.3\ \Omega \qquad I_R = V/R_R = 0.00136\ A$

$V_2 = IR = 0.00136(54) = 0.07\ V$

$I_{RL} = V/R = 0.07/120 = 0.00058\ A$

$V_5 = I_{RL}R_5 = 0.00058(44) = 0.026\ V$ → $V_5 = 0.026\ V$

$V_1 = IR = 0.0012(50) = 0.06\ V$

$V_8 = 0.0012(92) = 0.1104\ V$ → $V_8 = 0.1104\ V$

$V_7 = .2 - V_1 - V_8 = 0.0296\ V$ → $V_7 = 0.0296\ V$

I can't find my source of error. My answers seem correct because my math has been checked and agrees with Kirchoff voltage and current law. Does my answer stem from rounding errors? After looking at the answer, it seems I calculated resistance wrong perhaps.

E) $R_1 = 65\ K\Omega$
$R_2 = 60\ K\Omega$
$R_3 = 85\ K\Omega$
$R_4 = 94\ K\Omega$
$R_5 = 13\ K\Omega$
$R_6 = 83\ K\Omega$
$R_7 = 44\ K\Omega$
$R_8 = 11\ K\Omega$

$R_T = 118.12\ K\Omega \qquad I_5 = i_2 + i_3 + i_8$

$V_t = I_5 R_t = 4.75(118.12) = 561\ V$

$I_5 = 4.75\ mA$

$I_2 = \frac{R_4}{R_2+R_4}(I_5) = 3.18\ mA$

$I_3 = \frac{R_1}{R_3+R_2}(I_5 - I_2) = 0.502\ mA$

$I_8 = \frac{R_3}{R_3+R_8}(I_5 - I_2) = 1.07\ mA$

$I_6 = \frac{R_7}{R_7+R_6}(I_5 - I_2 - I_3) = 0.390\ mA$

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ENGR 210 HW6

A) $R_1 = 18\ \Omega$
$R_2 = 66\ \Omega$
$R_3 = 57\ \Omega$
$R_4 = 37\ \Omega$
$R_5 = 33\ \Omega$

$R_T = R_1 + R_2 + R_3 + R_4 + R_5 = 18 + 66 + 57 + 37 + 33 = 211\ \Omega$

$I = V_s / R_T = 7 / 211 = 0.03\ A$

$V = IR$

$V_1 = 18(.03) = 0.6\ V$
$V_3 = 57(.03) = 1.9\ V$
$V_5 = 33(.03) = 1.1\ V$

B) $R_1 = 7.6\ k\Omega$
$R_2 = 9.7\ k\Omega$
$R_3 = 6.9\ k\Omega$
$R_4 = 3.1\ k\Omega$
$R_5 = 4.6\ k\Omega$

$R_T = R_1 + R_2 + R_3 + R_4 + R_5 = (7.6 + 9.7 + 6.9 + 3.1 + 4.6) \times 10^3 = 31.9\ k\Omega$

$V_3 = IR_3 \rightarrow I = V_3 / R_3 = 3.45 / 6{,}900 = 0.0005\ A$

$V_T = IR_T = (0.0005)(31{,}900) = 15.95\ V$

$V_s = 15.95\ V$

C) $R_1 = 5.2\ k\Omega$
$R_2 = 3.6\ k\Omega$
$R_3 = 1.6\ k\Omega$
$R_4 = 7.2\ k\Omega$
$R_5 = 8.1\ k\Omega$

$R_T = (R_1^{-1} + R_2^{-1} + R_3^{-1} + R_4^{-1} + R_5^{-1})^{-1} = 0.74\ k\Omega$

$V = IR = 740(0.2) = 147\ V$

$I_2 = V / R_2 = 147 / 3{,}600 = 0.041\ A$

$I_4 = V / R_4 = 147 / 7{,}200 = 0.020\ A$