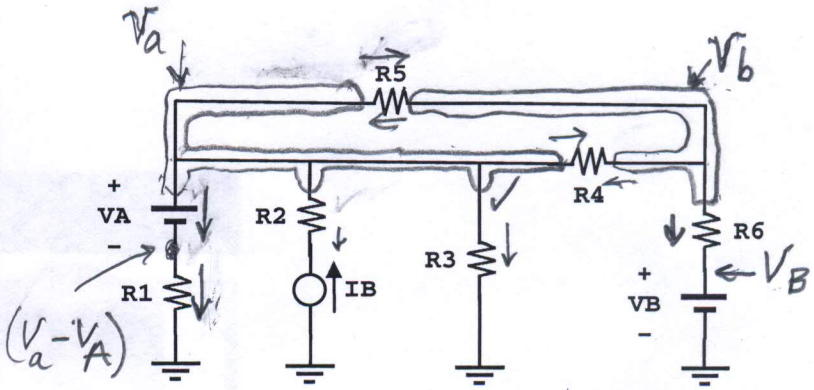
ELC_2320 Test #01A. 2021_0211. One sheet of Notes Permitted. Show All Work. Name:_____

Problem 1

a. Using Nodal Analysis, identify the major nodes and super nodes, name them Va, Vb, Vc, etc., using lower case a,b,c.
b. Carefully draw a closed loop around each one's full equipotential range of connections.
c. Develop the equations needed to solve the circuit in the boxes below, one node per box.
d. Place the equations into the empty matrix below, starting at top-left.



Eq. for Node a. $\frac{(V_a - V_A)}{R_1} + \frac{(V_a - V_b)}{R_5} + \frac{(V_a - V_b)}{R_4} + \frac{V_a}{R_3} + I_B = 0$

Eq. for Node b. $\frac{V_b - V_B}{R_6} + \frac{V_b - V_a}{R_4} + \frac{V_b - V_a}{R_5} = 0$

Eq. for Node ____.

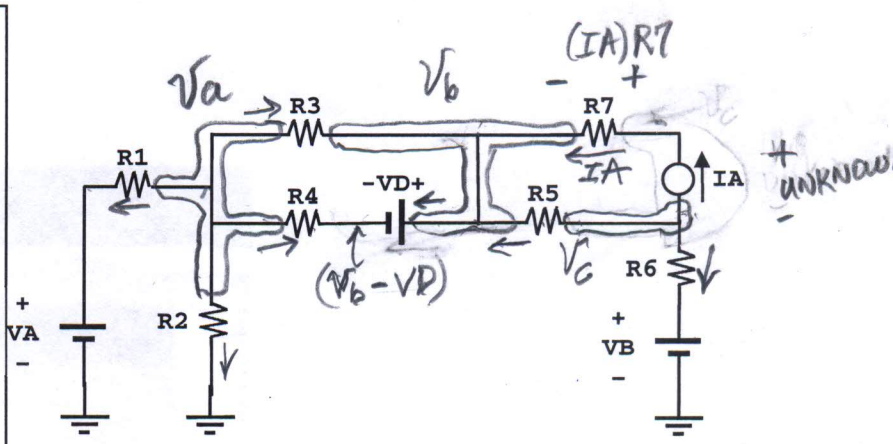
Eq. for Node ____.

					=	

ELC_2320 Test #01B. 2021_02_11. One sheet of Notes Permitted. Show All Work. Name:_____

Problem 1

a. Using Nodal Analysis, identify the major nodes and super nodes, name them Va, Vb, Vc, etc., using lower case a,b,c.
b. Carefully draw a closed loop around each one's full equipotential range of connections.
c. Develop the equations needed to solve the circuit in the boxes below, one node per box.
d. Place the equations into the empty matrix below, starting at top-left.



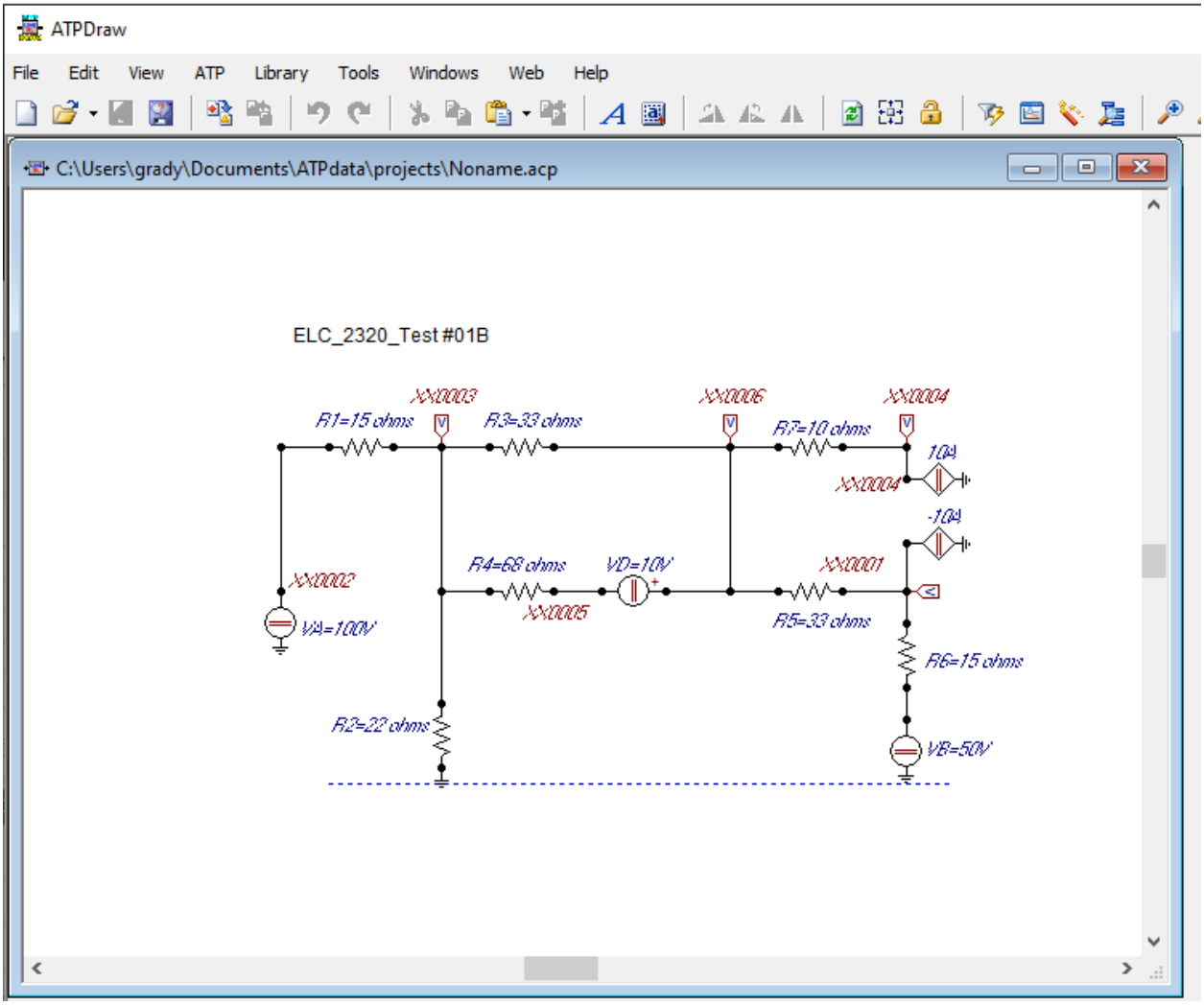
Eq. for Node a. $\frac{V_a}{R_2} + \frac{(V_a - V_A)}{R_1} + \frac{(V_a - V_b)}{R_3} + \frac{[V_a - (V_b - V_D)]}{R_4}$

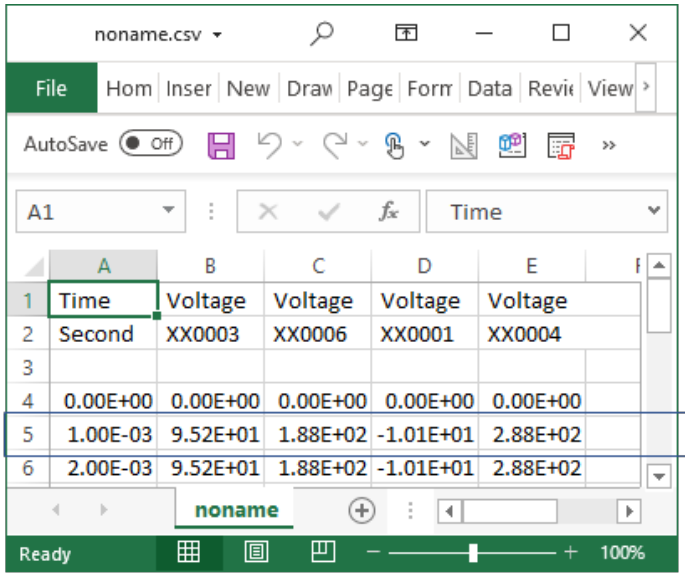
Eq. for Node b. $\frac{(V_b - V_D) - V_a}{R_4} + \frac{V_b - V_a}{R_3} - I_A + \frac{V_b - V_c}{R_5} = 0$

Eq. for Node c. $\frac{V_c - V_b}{R_5} + I_A + \frac{V_c - V_B}{R_6} = 0$

Eq. for Node ____.

					=	





	A	B	C	D	E
1	Time	Voltage	Voltage	Voltage	Voltage
2	Second	XX0003	XX0006	XX0001	XX0004
3					
4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
5	1.00E-03	9.52E+01	1.88E+02	-1.01E+01	2.88E+02
6	2.00E-03	9.52E+01	1.88E+02	-1.01E+01	2.88E+02