BRAC University

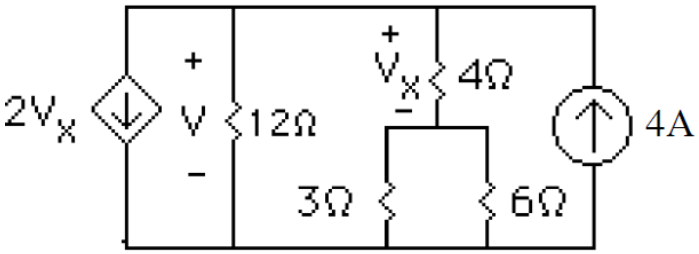
Semester: Spring 2024, Faculty: YAR

Course: CSE 251, Section: 02

Assignment: 01	Deadline: 10 Feb, 2024 (11:59 PM)	Total Marks: 80

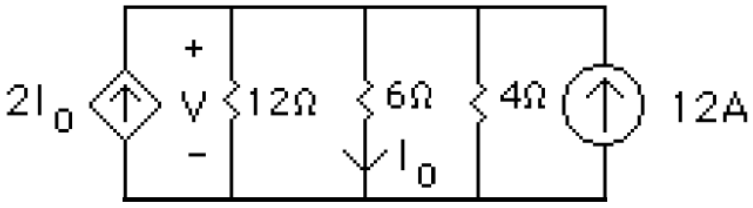
Ques: 01: **(5 marks)**

. Using nodal analysis, determine the voltage V in the figure shown below.



Ques: 02: **(5 marks)**

Using nodal analysis find the voltage V in the circuit shown below.



Ques: 03: **(5 marks)**

Find V_0 in Figure 7 using nodal equations.

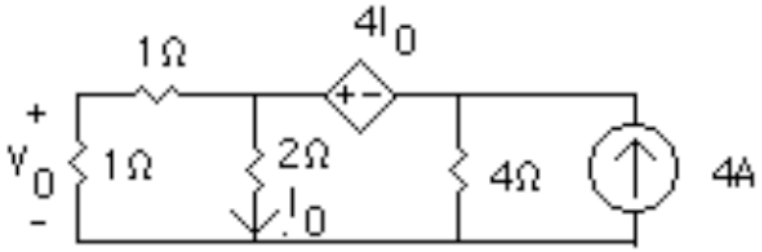
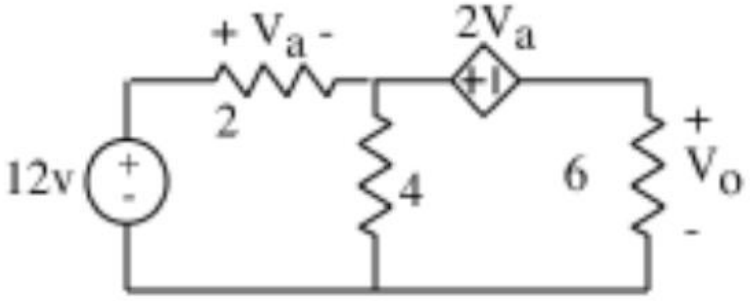


Figure 7

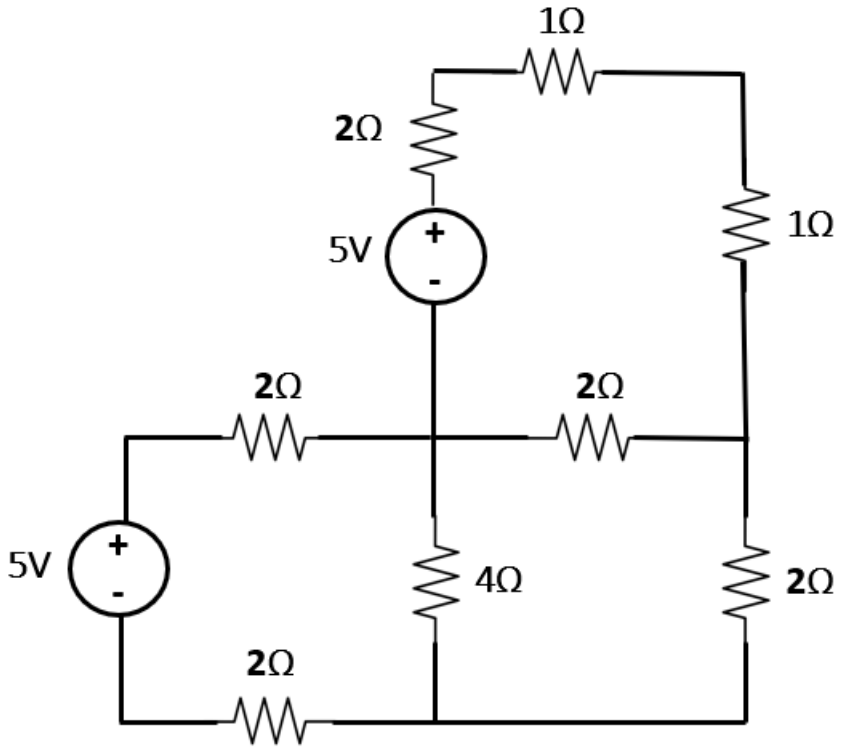
Ques: 04: **(5 marks)**

Find V_0 in the figure shown below using nodal analysis.



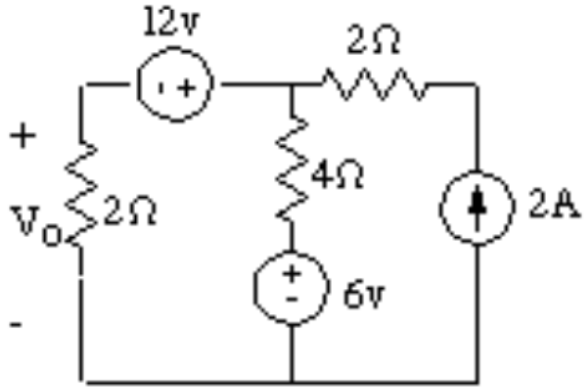
Ques: 05: **(5 marks)**

Find the current through the 4Ω resistor using Nodal analysis



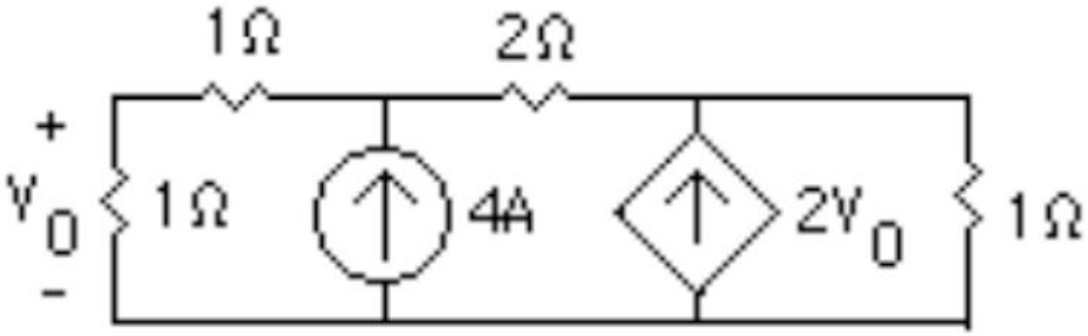
Ques: 06: **(5 marks)**

Use mesh analysis to determine V_0 in the circuit shown below.



Ques: 07: **(5 marks)**

Calculate the voltage V_0 from the following circuit using mesh analysis.



(Next page)

Ques: 08: (3+3+2+2 marks)

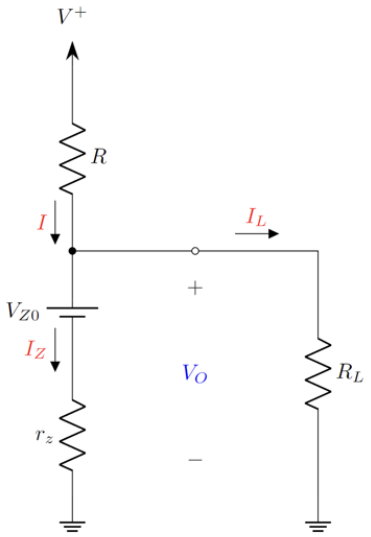
For $\boldsymbol{R} = 100\ \Omega$, $\boldsymbol{R_L} = 10\ \text{k}\Omega$, $\boldsymbol{r_z} = 20\ \Omega$, $\boldsymbol{V_{ZO}} = 3\ \text{V}$, and $\boldsymbol{I_Z} = 1\ \text{mA}$.

a. Find $\boldsymbol{V_O}$

b. Find $\boldsymbol{I_L}$

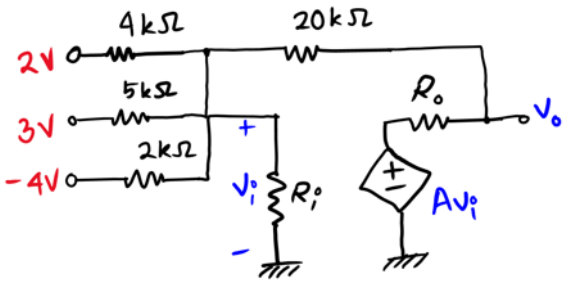
c. Find $\boldsymbol{I}$

d. Find $\boldsymbol{V^+}$



Ques: 09: (10 marks)

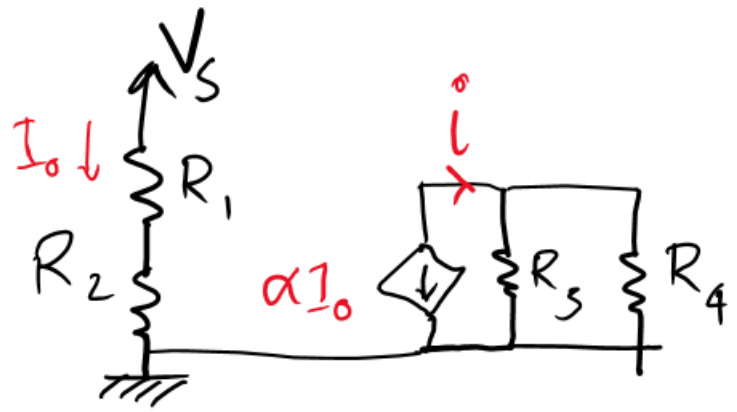
In the above circuit A=100, Ri=100 kΩ and Ro=1 kΩ. Answer the following questions:



1. Write the node equations for the nodes indicated by vi and vo. (4)
2. Solve the node equations to find the values of vi and vo. (3)
3. Can circuit theorems based on linearity principle (such as superposition principle) be applied to the above circuit? Explain in short why or why not. (3)

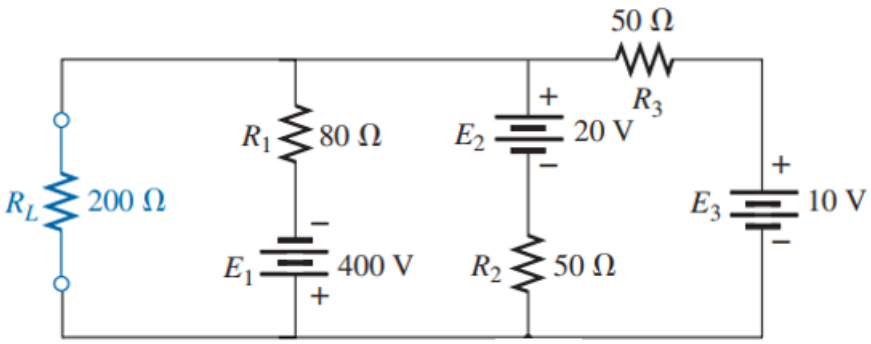
Ques: 10: **(5 marks)**

Find the loop presentation of the following circuit:



Ques: 11: **(5 marks)**

Draw the alternate representations of the following circuits [Note that the number of floating sources should be minimized].



Ques: 12: **(15 marks)**

(Next page)

- Find the circuit