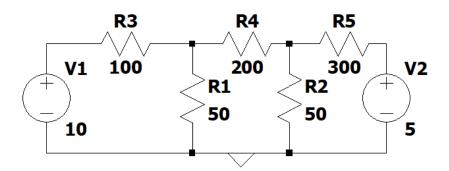
Experiment No.2 Date:21/09/2021

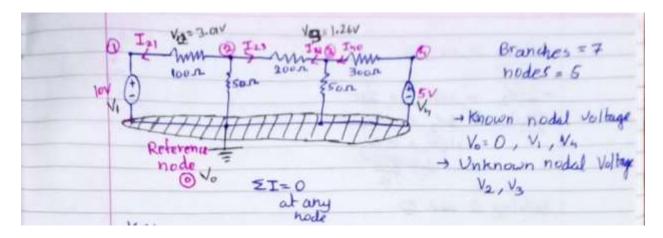
Verification of Kirchhoff's Current Law

Objectives:

- 1. To verify KCL and find the Nodal Voltages
- 2. To verify it on breadboard on www.tinkercad.com

Verification of KCL and Nodal Voltages





Observation:

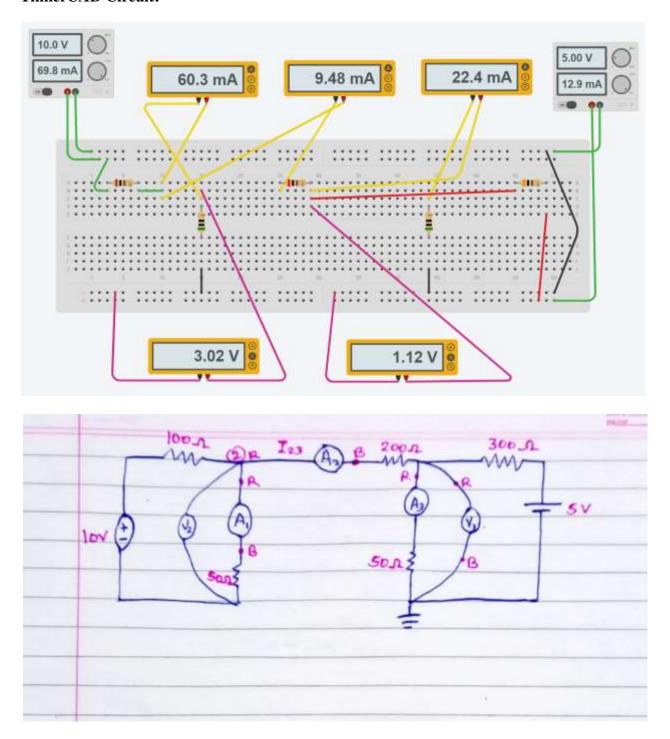
S.No	Parameter to be measured	Value Measured with Units
1	V_2	3.01V
2	V_3	1.12V
3	I ₁₂ : Current through R ₁	0.069A
4	I ₂₃ : Current through R ₂	0.009A
5	I ₃₄ : Current through R ₃	-0.0129A
6	I ₂₀ : Current through R ₄	0.0602A
7	I ₃₀ : Current through R ₅	0.0225A

Calculations:

	KCL
	Node 2 & I entering = & I seaving node node
	$I_{o_2} = I_{21} + I_{23}$
	$= \frac{0 - v_2}{50} = \frac{v_2 - v_1}{100} + \frac{v_2 - v_3}{200}$
	=) - 1/2 = 1/2 + 1/2 1/2 1
	$= \frac{1}{50} - \frac{1}{100} = \frac{1}{200} + \frac{1}{200} = 1$
	$=) -4V_2 = 2V_2 - 20 + V_2 - V_3$
	$=$) $[7v_2 - v_3 = 20] - 0$
	At a second and a
• 1	S C L
	Node 3 SIEntering = E I Jeaving hade nade
	node node
	$I_{n_3} = I_{32} + I_{30}$
	=) Vu_V2 = V2 V2 + V2 V2
	$=) \frac{V_{1}-V_{2}}{300} = \frac{V_{3}-V_{2}}{200} + \frac{V_{2}-V_{0}}{50}$
	-) 2Vy - 2V3 = 3V3 - 3V2 + 12V3- 12/000
2	=) [7 V3 3V2 = 10] -@
	The state of the s
100	
5	William a property of the state of

50lving 0 and 2	
7,	
$-346_2 - 214_2 + 1194_3 = 70$	
$21V_2 - 3V_3 = 60$	
116 /3 = 130	
V ₃ = 130	
⇒ V3=1.12067	
- 12 12 12 12 12 12 13 14 15 15 15 15 15 15 15 15 15 15 15 15 15	
=) V ₂ = 3.017V	
$I_{12} = 10 - 3.01 = 0.069A$	
1002	
I23 = 3.01 - 1.126 = 0.009A	4
200-12	7823
I34 = 1.126 - 5 = -0. 0129A	
300-1	
$I_{20} = 3.01 - 0 = 0.0602A$	
SON	
I30= 1.126-0 = 0.0225 A	
50_0	
Power supplied = V1 x I12	V12= V10- V20
by 10V = 10x 0.069A = 0.69W	= 10-3.01
Hower dissipited = VaxI12	= 6.99V
in 1002 = 6.99 x 0.019 = 0.48W	

TinkerCAD Circuit:



 $\underline{Shareable\ link:}\ https://www.tinkercad.com/things/9ctjWHqaSu7-stunning-densor/editel?sharecode=V3w64UNp21IDgh79C7hXV44ZR9-8KyT61ctrX9P6H7o$

To Do:

- 1. Verify KCL using the above measurements
- 2. Paste the Sharable link and Screenshot of Simulation done in TinkerCAD
- 3. Picture of the theoretical calculation done in your notebook