Laboratory 5 - Node Voltage and Mesh Current Methods

SPICE Simulation

Problem 1

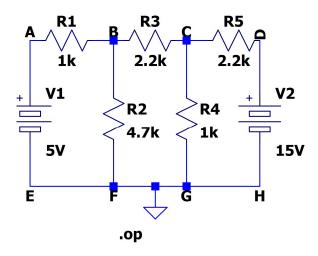


Fig 1a. Circuit Diagram

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🏿 * C:\Users\amrit\Downloads\SUU Electrical Lab Simulations\Lab Simulation Files\L5 Circuit Diagram 1.asc
        --- Operating Point ---
V(a):
                                  voltage
V(d):
                  15
                                  voltage
V(b):
                  4.24824
                                  voltage
                  4.58291
V(c):
                                  voltage
I (R5):
                  0.00473504
                                  device_current
I(R3):
                  0.000152124
                                  device_current
I(R1):
                  -0.000751758
                                  device_current
I(R4):
                  0.00458291
                                  device_current
I(R2):
I(V2):
                  0.000903881
                                  device_current
                                  device_current
                  -0.00473504
I(V1):
                  -0.000751758
                                  device_current
```

Fig 1b. Operating Points

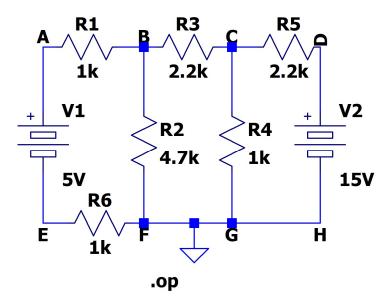


Fig 2a. Circuit Diagram with Resistor between Nodes E & F

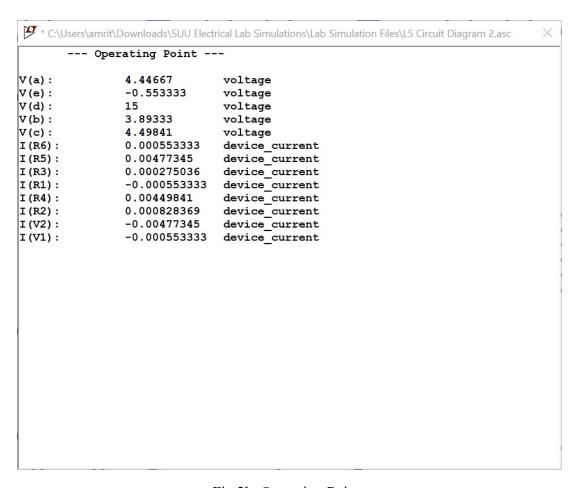


Fig 2b. Operating Points

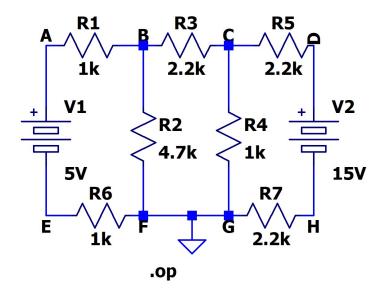


Fig 3a. Circuit Diagram with Resistor between Nodes G & H

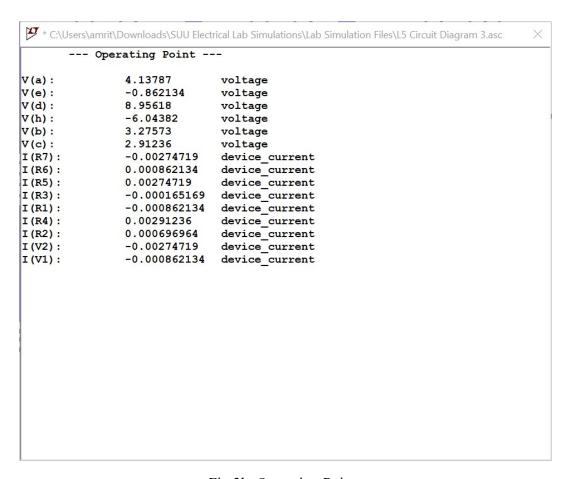


Fig 3b. Operating Points

Page | 4 Both Nodal and Mesh analysis can be applied for all three cases but mesh is easier to solve because it doesn't involve a reference ground voltage. But Nodal is the more practical approach of measurement because the mesh cannot be done in real-time.