CSU11031 Electronics Assignment 1

1. Connect up online the circuit below using Multisim from National Instruments:

Place voltmeters at each node of the circuit and ammeters at each branch. Run the simulation.

(i) Verify by calculation that each of the voltage and current values shown are correct. Use the Voltage Divider rule to verify the voltage at Node 2.

[10 Marks]

(ii) Verify by calculation Kirchoff's Current Law for the circuit. Compare with the results given by the simulator.

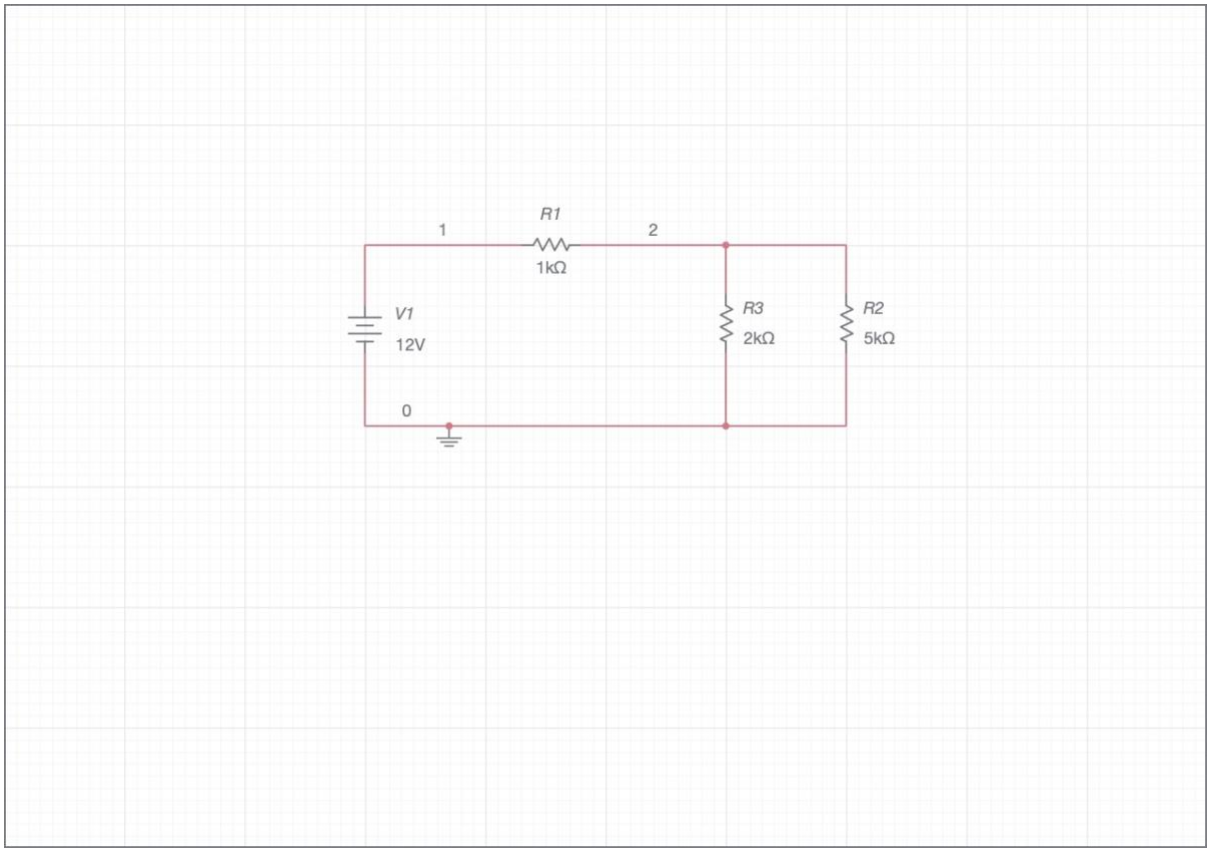
[10 Marks]

(iii) Verify by calculation Kirchoff's Voltage Law for the circuit. Compare with the results given by the simulator.

[10 Marks]

(iv) Replace the battery with a 12V (peak) ac source, run the simulation, observe Grapher and explain your results

[10 Marks]



2. Connect up the circuit below. You can assume the resistance of the lamp is about 10 Ohms. You should support your answers with calculations.

(i) Run the simulation. What do you observe?

[10 Marks]

(ii) Replace R1 with a 1K resistor. What do you observe and why?

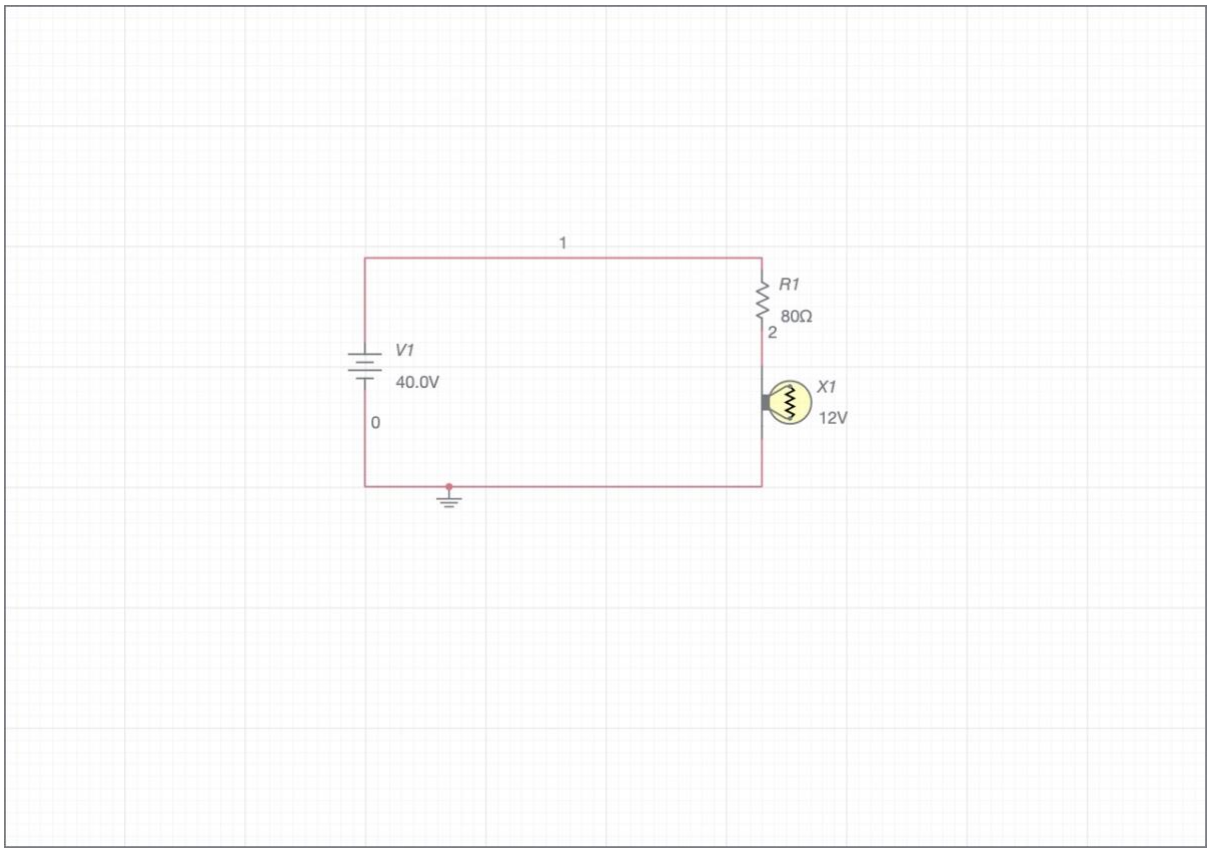
[10 Marks]

(iii) With R1 at 80 Ohms, place a 1K resistor in parallel with the lamp. What do you observe and why?

[10 Marks]

(iv) Replace the parallel 1K resistor with a 10 Ohm resistor keeping R1 at 80 Ohms. What do you observe and why?

[10 Marks]



Note: Your report should be typewritten and contain all of the circuits you implemented and associated calculations and explanations. The header page should state the title (CSU11031 Electronics Assignment 1), your name and your student number. You should note that most of the marks go for the explanation of your observations. 20 Marks go for

presentation. Your report will be downgraded if it does not meet a minimum acceptable standard.