



Assignment 01
Basic Electronics /Physics
BC (CS) & BS (SE)
Fall Semester 2018

PART-A

- Q.1** Discuss the definition, law, and derivation using examples.
- Q.2** Explain the three type of diode approximations in detail.
- Q.3** Differentiate between voltage source and current source using examples, graphs, and equations.
- Q.4** Summarize the steps involve in applying the Thevenin's theorem and Norton's theorem.
- Q.5** Discuss the following:
- | | | | | | |
|----|-----------------|----|------------------|----|-------------------|
| a. | Troubleshooting | b. | Solder Bridge | c. | Cold-solder joint |
| d. | An open device | e. | A shorted device | | |

PART-B

- Q.1** A given voltage source has a voltage (V_S) of 12 V and an internal resistance (R_S) of 0.2 Ω . For what values of load resistance (R_L) will the voltage source appear stiff?
- Q.2** Find the load current (I_L) in Q.1 when the voltage source appears stiff.
- Q.3** A current source of 10 mA has an internal resistance (R_S) of 100 K Ω . Over what range of load resistance (R_L) is the current source stiff?
- Q.4** What is the load voltage (V_L) in Figure 01 when the load resistance (R_L) equals 10 k Ω ?
- Q.5** Find the Thevenin voltage (V_{TH}) and resistance (R_{TH}) in Figure 02 and draw the Thevenin circuit?
- Q.6** Using Thevenin's theorem, what is the load current in Figure 02 if R_L is 6 k Ω ?
- Q.7** Find the Thevenin's circuit for Figure 03 using NI Multisim and attach the printout in the answer sheet.
- Q.8** Convert the Thevenin circuit obtained in Q.5 to Norton circuit.

Q.9 Find the Norton current (I_N) and resistance (R_N) in Figure 02 and draw the Norton circuit?

Q.10 What could the possible troubles be if you measure $V_A = 5.12\text{ V}$ and $V_B = 5.6\text{ V}$ in Figure 04?

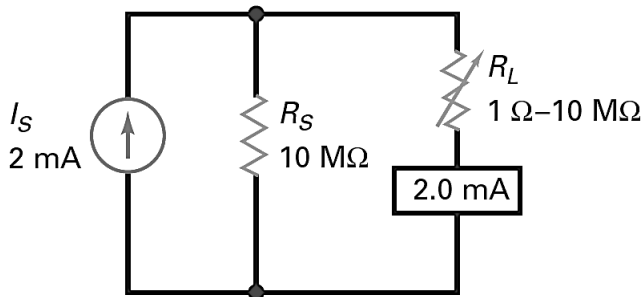


Figure 01

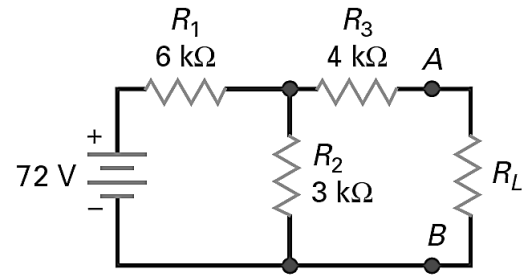


Figure 02

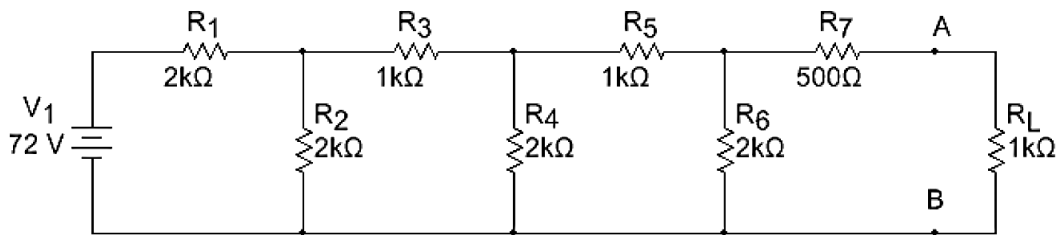


Figure 03

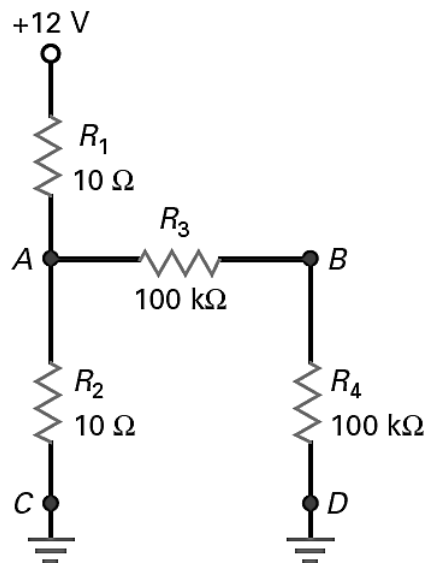


Figure 04