



**Assignment 01**  
**Basic Electronics**  
**BC (CS)**  
**Spring Semester 2019**

**PART-A**

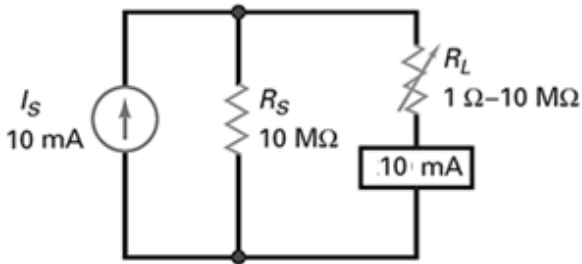
- Q.1** Discuss the definition, law, and derivation using examples.
- Q.2** Explain the three type of diode approximations in detail.
- Q.3** Differentiate between voltage source and current source using examples, graphs, and equations.
- Q.4** Summarize the steps involve in applying the Thevenin's theorem 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**

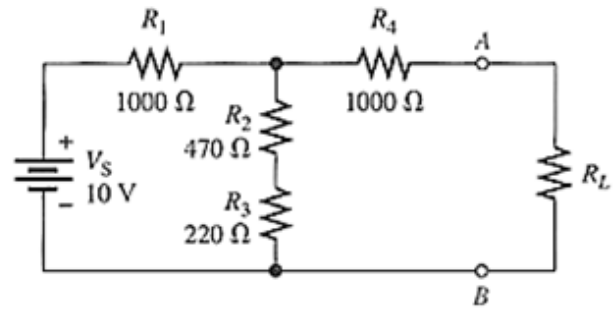
- Q.1** A given voltage source has a voltage ( $V_S$ ) of 12 V and an internal resistance ( $R_S$ ) of 0.2  $\Omega$ . For what values of load resistance ( $R_L$ ) will the voltage source appear stiff?
- Q.2** Find the load current ( $I_L$ ) in Q.1 when the voltage source appears stiff.
- Q.3** A current source of 10 mA has an internal resistance ( $R_S$ ) of 100 K $\Omega$ . 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 $\Omega$ ?
- 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 ( $I_L$ ) in Figure 02 if  $R_L$  is 6 k $\Omega$ ?
- 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?

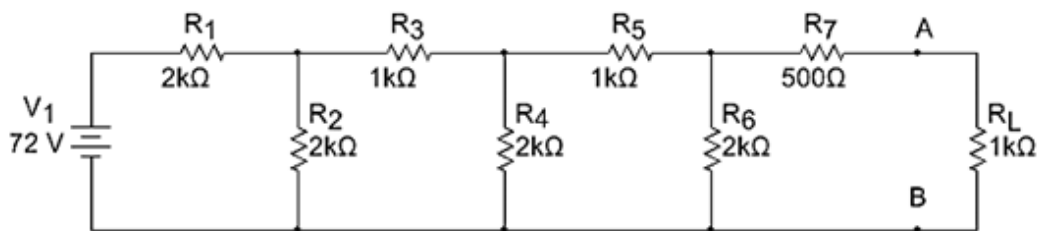
**Q.10** What could the possible troubles be if you measure  $V_A = 12\text{ V}$  and  $V_B = 6\text{ V}$  in Figure 04?



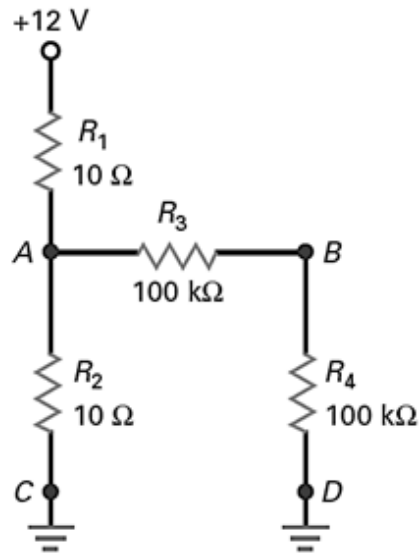
**Figure 01**



**Figure 02**



**Figure 03**



**Figure 04**