

**KING FAHD UNIVERSITY OF PETROLEUM AND MINERALS****Electrical Engineering Department****EE 208 ELECTRICAL SYSTEMS****Experiment # 6 COMPUTER SIMULATION OF A D.C. CIRCUIT****OBJECTIVE:**

- 1- To simulate a D.C. circuit on a computer using a Pspice.
- 2- To verify the computer simulation theoretically.

**APPARATUS:** A Computer with Pspice installed in  
A Printer that is connected to the computer

**PROCEDURE:****Part I Using Pspice:**

- 1- Draw the circuit given in Figure 1 in the Schismatic.
- 2- Inter the values and names of each element.
- 3- Run the program and find the variables indicated in the circuit of Figure 1.
- 4- Summarize your results in Table 1.
- 5- Attach to the report of this experiment a printout of the Schematic you draw for this purpose, and a computer printout of the results obtained.

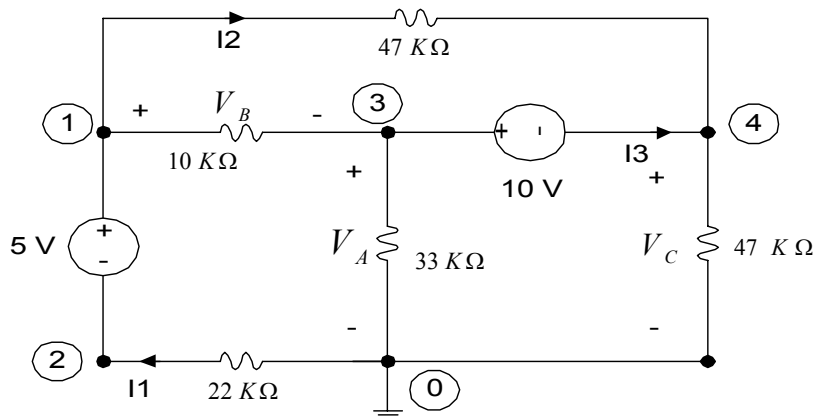


Figure 1

**Part II Using Pspice:**

- 1- It is required to see **how the voltage  $V_c$**  changes with any change that may occur in the 5 V voltage source in the circuit of Figure 1.
- 2- Perform any changes that may be required to the schematic that was prepared in the previous part to be able to find the **DC swap** of the 5 V source from **0 V to 20 V**.

- 3- **Run** the program and **plot** the voltage  $V_C$  as the voltage of the 5 V source change.
- 4- Attach to the report of this experiment a printout of the **Schematic** you draw for this purpose, and a computer **printout** of the **plot** obtained.

**REPORT:**

- 1- **Calculate** all the **variables** indicated in the circuit of Figure 1 using **Mesh** analysis. **Record** your results in Table 1.
- 2- **Compare** the computer results and the experimental results. Calculate the percentage **error**.
- 3- Discuss the source of any discrepancies between the computer and calculated results.

**QUESTIONS:**

- 1- What advantages do computer simulations have as compared to hand calculation?
- 2- What disadvantages do computer simulations have as compared to hand calculation?
- 3- Does a computer simulation represent actual circuit behavior? Discuss the point by referring to the results you obtained in this experiment.

**EXPERIMENT # 6 Laboratory Report**

**Name:** ..... **I.D.** ..... **Lab. Section:** .....

TABLE 1

**Results for Circuit of Figure 1:**

Variable	$I_1$	$I_2$	$I_3$	$V_A$	$V_B$	$V_C$
<b>Computer Simulation</b>						
<b>Calculated Results</b>						
<b>% Error</b>						