

PSPICE Assignment #1

General Information:

- It is required that you use the ORCAD Capture (PSPICE) Version 9.1 or later. PSPICE is available for student use in the H-151 and H-208 computer labs. Free copies of the software are available in the back of the textbook Schematic Capture with Cadence PSPICE and in the PSPICE supplement that may come packaged with the textbook for the class.
- When submitting a report, follow the format of the example illustrated in the “**PSPICE Sample Report.**” This document is also available on the instructor’s web page.
- The report that you turn in should reflect your own work for all PSPICE assignments. You may give other students limited assistance, but there should be absolutely no sharing of computer files. If two reports, schematics, or solutions look too similar, the instructor will investigate and both students could receive grades of 0 for the assignment if evidence suggests that cheating was involved.

Reference: (also see the instructor's web page)

Read Chapter 1 in Schematic Capture with Cadence PSPICE, 2nd Edition by Herniter

Sample PSPICE Report

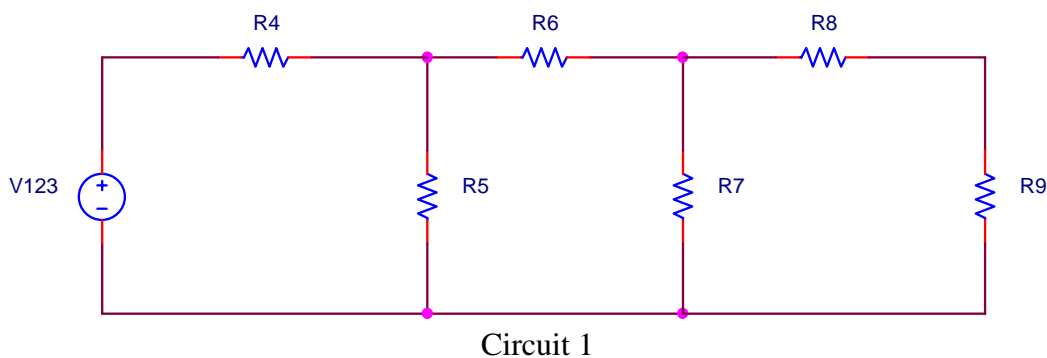
PSPICE Example: *DC Circuit - Determining Node Voltages* (File: DC Circuit.opj)

PSPICE Example: *DC Circuit - Using voltage and current printers* (File: DCPrint.opj)

PSPICE Example: *Analyzing Circuits with Dependent Sources* (File: DependentSources.opj)

Assignment:

1. Use values for Circuit 1 as follows:
 - Let V123 have a value equivalent to the first 3 digits of your SSN in volts.
 - Let R4 through R9 equivalent to the digits 4 through 9 in your SSN in k Ω (use 10 k Ω for a digit of 0).
 - For example, if your SSN is 226-77-0107 then V123 = 226V, R4 = R5 = R9 = 7k Ω , R6 = R8 = 10k Ω , and R7 = 1k Ω
- A. Analyze Circuit 1 by hand to determine
 - The current through R5 and R6
 - The voltage across R4 and R9
 - The power dissipated by R7 and R8
- B. Analyze Circuit 1 using PSPICE as follows:
 - Use a Bias Point analysis to find the quantities listed in part A above.
 - Adjust the placement of each value on the schematic so that it is moved slightly away from the component to avoid crowding. Do not show any current, voltage, or power values on the schematic other than those required.
 - Reminder: Be sure to add text to the schematic as indicated in the Sample Report.
- C. Include a table comparing hand values and PSPICE values. They should agree! Also include a brief discussion of the results.



2. Problem 4.24 in Electric Circuits, 8th Edition, by Nilsson
 - A. Analyze the circuit by hand as described in the textbook
 - B. Analyze the circuit using PSPICE as follows:
 - Use a Bias Point analysis to find the quantities found in part A above.
 - Adjust the placement of each value on the schematic so that it is moved slightly away from the component to avoid crowding. Do not show any current, voltage, or power values on the schematic other than those required.
 - C. Include a table comparing hand values and PSPICE values (including the sum of the power absorbed and the sum of the power delivered). They should agree! Also include a brief discussion of the results.

3. Problem 2.28 in Electric Circuits, 8th Edition, by Nilsson
 - A. Analyze the circuit by hand (find V_y and i_B).
 - B. Analyze the circuit using PSPICE as follows:
 - Use a DC Sweep analysis to find the quantities found in part A above.
 - Include a voltage printer and a current printer to measure the quantities specified.
 - Do not show any Bias Point values on the schematic.
 - Clearly box and label the required values in the .OUT file and include it in the report.
 - C. Include a table comparing hand values and PSPICE values. They should agree! Also include a brief discussion of the results.

4. Problem 4.46 in Electric Circuits, 8th Edition, by Nilsson
 - A. Analyze the circuit by hand (find V_Δ and i_Δ).
 - B. Analyze the circuit using PSPICE as follows:
 - Use a DC Sweep analysis to find the quantities found in part A above.
 - Include a voltage printer and a current printer to measure the quantities specified.
 - Do not show any Bias Point values on the schematic.
 - Clearly box and label the required values in the .OUT file and include it in the report.
 - C. Include a table comparing hand values and PSPICE values. They should agree! Also include a brief discussion of the results.