EGR 271 Due date: [See Due Dates Table](file:///E%3A%5CCourses%5CEGR271%5CPSPICE%20Assignments%5CDueDates.pdf)

Circuit Theory I

File: N271PS1

**PSPICE Assignment #1**

**General Information**:

1. It is required that you use the Cadence Capture (PSPICE) Version 16.2 or later. PSPICE is available for student use in the following locations:
* Virginia Beach Campus: Rooms H-151, H164, H-179, H208, H101, H103
* Chesapeake Campus: Rooms 409 (CT2) and 513 (CT3)
* Tri-Cities Center: Rooms 1101 and 1109
1. The free demonstation software can downloaded from Cadence. Search for ***Cadence Capture Student Download*** or try the following link: <http://www.cadence.com/products/orcad/pages/downloads.aspx>
Several items may be available for download. Select the software for ***Capture and PSPICE***.
2. For information on using Cadence Capture:
* A Cadence Capture supplement comes with the text used in EGR 271-272
* PSPICE lectures (tutorials) are available at: <http://faculty.tcc.edu/PGordy/Orcad/index.htm> or from the course website
1. When submitting a report, follow the format of the example illustrated in the “**PSPICE Sample Report**.” This document is also available on the course website.
2. 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 course web site)

***Sample PSPICE Report***

***PSPICE Lecture #1*** (Bias Point Analysis)

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. Problem 3.11 in Electric Circuits, 9th Edition, by Nilsson (also shown below)
2. Analyze the circuit by hand as described in the textbook.
3. Analyze the circuit using PSPICE as follows:
	* Use a **Bias Point analysis** to find the quantities found in part A above.
	* Be sure to add text to the schematic as indicated in the Sample Report.
	* 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.
4. Include a table comparing hand values and PSPICE values (explain any additional calculations such as if you use node voltages from PSPICE to find a component voltage or if PSPICE give a different sign than your hand calculations). Also include a brief discussion of the results.



2. Use values for Circuit 2 as follows:

1. Let V123 have a value equal to the first 3 digits of your StudentID in volts.
2. Let R1 through R6 equivalent to the digits 1 through 6 in your StudentID in kΩ (use 10 kΩ for a digit of 0).
3. For example, if your StudentID is 9870654 then V123 = 987V, R1 =9 kΩ, R2 =8 kΩ, R3 = 7kΩ, R4 = 10kΩ, R5 = 6 kΩ, and R6 = 4kΩ
4. Analyze Circuit 2 by hand to determine
5. The current through R1 and R6
6. The voltage across R3 and R5
7. The power dissipated by R2 and R4
8. Analyze Circuit 2 using PSPICE as follows:
9. Use a **Bias Point analysis** to find the quantities listed in part A above.
10. 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.
11. Be sure to add text to the schematic as indicated in the Sample Report.
12. Include a table comparing hand values and PSPICE values (explain any additional calculations such as if you use node voltages from PSPICE to find a component voltage or if PSPICE give a different sign than your hand calculations). Also include a brief discussion of the results.

**R5**

**R2**

**R4**

**R1**

**R3**

**V123**

**R6**

Circuit 2

1. Problem 2.28a in Electric Circuits, 9th Edition, by Nilsson (also shown below)
2. Analyze the circuit by hand (find Vy and iB only).
3. Analyze the circuit 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.
* Be sure to add text to the schematic as indicated in the Sample Report.
* Include a table comparing hand values and PSPICE values (explain any additional calculations such as if you use node voltages from PSPICE to find a component voltage or if PSPICE give a different sign than your hand calculations). Also include a brief discussion of the results.



4. Use values for Circuit 4 as follows:

1. Let V123 have a value equal to the first 3 digits of your StudentID in volts.
2. Let R1 through R6 equivalent to the digits 1 through 6 in your StudentID in kΩ (use 10 kΩ for a digit of 0).
3. For example, if your StudentID is 9870654 then V123 = 987V, R1 =9 kΩ, R2 =8 kΩ, R3 = 7kΩ, R4 = 10kΩ, R5 = 6 kΩ, and R6 = 4kΩ
4. Analyze Circuit 4 by hand to determine
5. The current through R6
6. The voltage across R2
7. Analyze Circuit 4 using PSPICE as follows:
8. Use a **Bias Point analysis** to find the quantities listed in part A above.
9. 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.
10. Be sure to add text to the schematic as indicated in the Sample Report.
11. Include a table comparing hand values and PSPICE values (explain any additional calculations such as if you use node voltages from PSPICE to find a component voltage or if PSPICE give a different sign than your hand calculations). Also include a brief discussion of the results.

R2

R6

R4

R3

R1

R5

V123

Circuit 4