EEL 3302; ELECTRONICS I

CAD #1 – 9/10/07   Student _____

INSTRUCTIONS

1. All CAD assignment write-ups must contain the following elements presented in order.
   a) This page with name and signature affixed.
   b) A summary page containing PSPICE results compared with formulae and calculator ("by hand") results, together with an explanation of any differences. Summary is page 1.
   c) A complete PSPICE circuit diagram (schematic) showing the bias voltages and currents, a complete listing of the PSPICE output file, and all graphs required by the assignment for each separate simulation. You may have to repeat this section several times depending on the assignment.
   d) The "by hand" calculations and any associated required figures.

2. Use a comprehensive word processing application (such as WORD®) to assemble your report. All pages must have a printed header or footer (your choice) containing the CAD assignment number, student name, date and page number. All tables, schematics, graphs, and drawings must be captioned starting with Table 1, Figure 1, etc. Reference the page and figure caption for data presented on the summary page. Mark the location on any graph where data is taken for the summary page. Orient figures to give the largest possible presentation and do not place more than one figure on a page. Reverse the PSPICE graph background from black to white. The "by hand" calculations and figures may be handwritten but all other requirements must be satisfied. Use 8½" x 11" printer paper for all PSPICE results and the "by hand" calculations and any associated required figures. Do not print or write on the backside of any page. "Portrait" pages must have the top aligned with the top of the stack. "Landscape" pages must have the top aligned with the left of the stack. Secure all pages with one staple in the far upper left corner of the stack. All material on each page should be visible. Work failing to conform to these specifications will not be accepted and a grade of "0" will be assigned. Late write-ups will not be accepted without good cause, e.g., documented medical problem, employer required travel.

3. Students are encouraged to collaborate in the initial effort where the emphasis is on understanding and determining a course of action. Students are prohibited from any collaboration, cooperation and conversation in the performance of the simulation, "by hand" analysis and write-up. Write-ups that are unacceptably similar will be challenged and may be considered as academic dishonesty.

This work is solely the product of my effort. I have neither given nor received assistance related to this assignment, and I have read, understood and complied with the requirements of this assignment to the best of my knowledge.

_____
(signature)

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<u>CAD #1 – 9/10/07</u>

This CAD exercise demonstrates the non-linear V-I characteristic of a rectifier diode.

Construct a test setup consisting of a dc source and D1N4002 connected in parallel.

Perform a PSPICE dc sweep to determine the diode forward characteristic with the diode voltage varying from 0 to 1000 mV. Plot the I-V characteristic.

Construct a test setup consisting of a sinusoidal time-domain source and a D1N4002 connected in parallel. Use a dc offset of 700 mV with a peak ac of 100 mV at 60 Hz.

Perform a PSPICE transient analysis to illustrate the distortion introduced into the diode current by the non-linear V-I characteristic. Plot the diode current and voltage on the same graph.

No "by-hand" calculations are required.

This assignment is due at the beginning of class on Wednesday, September 26, 2007.