NAME _____ UCID _____

1. Answer all four questions. Maximum mark is 18.
2. For multiple-choice questions, circle the correct answer. There may be more than one correct answer, in which case circle all correct answers.
3. Show your work as much as possible, within time and space constraints.
4. Only this one sheet of paper will be collected and graded

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1. In the space below, draw a diode with a 0.5 V forward bias whose anode is at 1 V. *(2 marks)*

2. Which of the following is/are true for a real Zener diode? *(2 marks)*

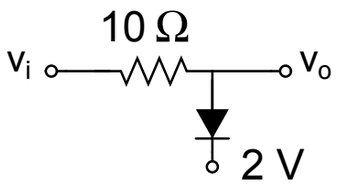
(a) Cut-in voltage is engineered

(b) Breakdown voltage is engineered

(c) Current can go from the anode to the cathode

(d) Current can go from the cathode to the anode

3. In the circuit to the right, the input is a 10 V peak to peak (ie from -5 to +5 V) sine wave. The maximum current through the 10 Ω resistor was found to be 0.24 A.
Find (a) the cut-in voltage of the diode and (b) the minimum current through the resistor. *(2 marks)*



V_{ci} = _____ i_{min} = _____

4. In the circuit below, D_1 has a cut-in voltage of 0.4 V and D_2 has a cut-in voltage of 0.7 V. Find expressions for v_o for 0 V$< v_i <$10 V. *(12 marks)*