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. Use reverse if needed.

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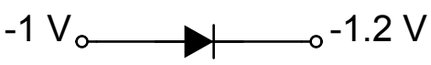
1. Cut-in voltages for the real diodes below are 0.5 V. Which of them is/are forward biased? *(2 marks)*

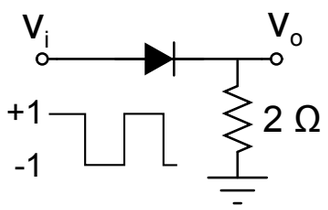
(a) 

(c) 

(b) 

(d) 

2. The cut-in voltage for the ideal diode to the right is 0.25 V. Calculate the maximum and minimum magnitude v_o can reach if the input is a square wave between ± 1 V as shown *(2 marks)*



v_o(max) = _____ v_o(min) = _____

3. State true/false with a short explanation. "For a given voltage across a real diode, the current increases if the temperature increases" *(2 marks)*

4. In the circuit below, D_1 has a cut-in voltage of 0.3 V and D_2 has a cut-in voltage of 0.7 V. Find expressions for v_o and i_o for -5 V$< v_i <$+5 V. *(12 marks)*