ECE 65 Quiz 1

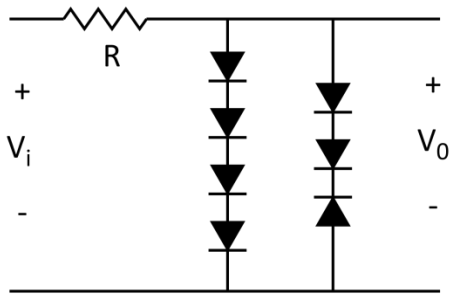
Name_____ PID_____

For all questions, assume the piecewise linear model for diodes.

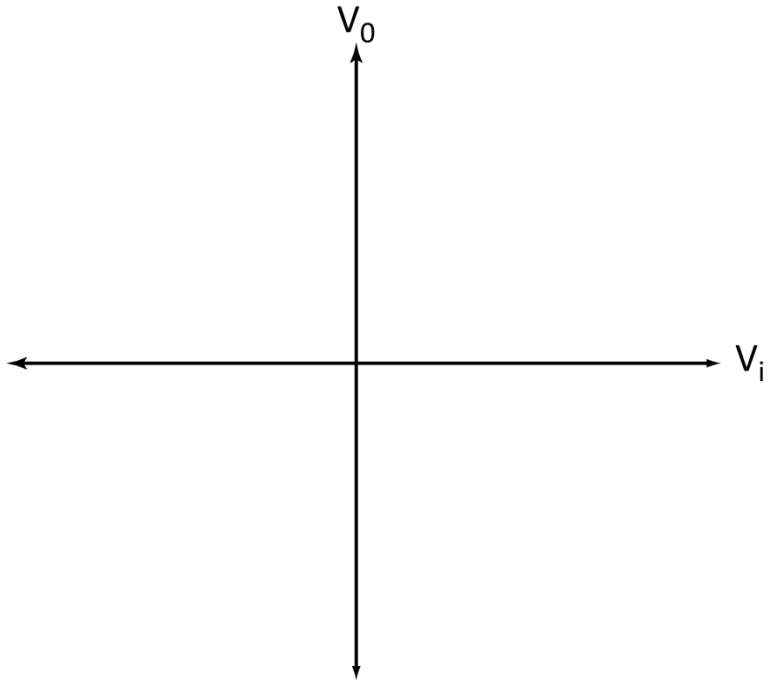
Question 1 (10 points)

R=1 kΩ, and V_{D0}=0.7 V

(a) Find the transfer function (V_o for all possible V_i) for the following circuit:



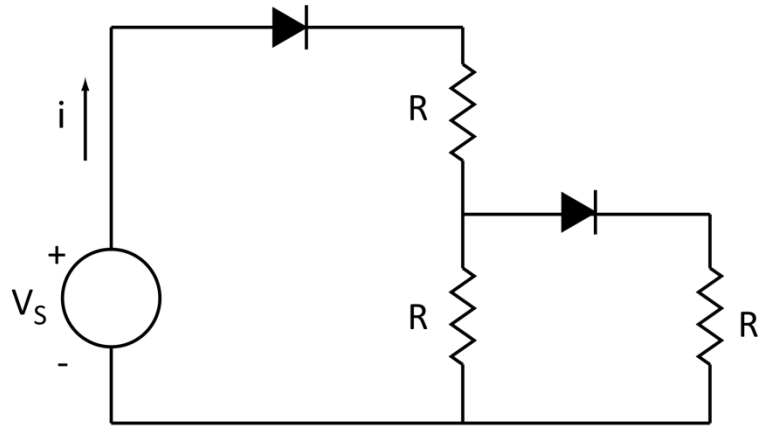
(b) Sketch the transfer function.
Indicate the values of V_i or V_o at any points where the slope is discontinuous.



Question 2 (10 points)

R=1kΩ, V_S=9 V, and V_{DO}=0.7 V

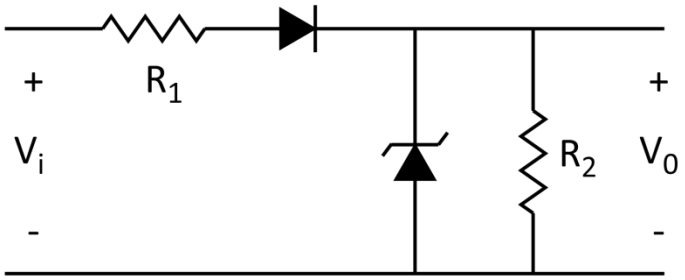
Find the current, i, labeled in the circuit below:



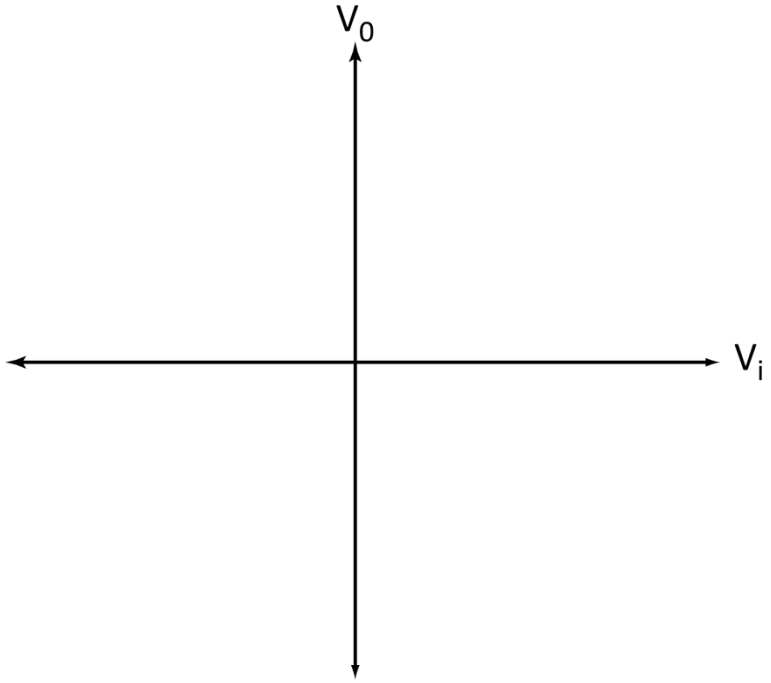
Question 3 (10 points)

R_1=2kΩ, R_2=2kΩ, V_{DO}=0.7 V, and V_Z=5 V

(a) Find the transfer function for the circuit below:



(b) Sketch the transfer function.
Indicate the values of V_i or V_o at any points where the slope is discontinuous.



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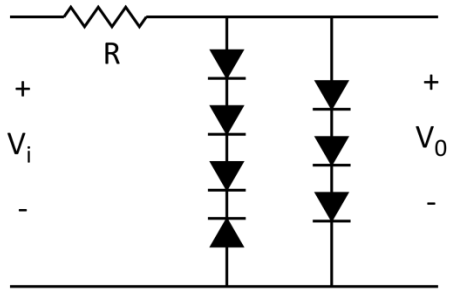
For all questions, assume the piecewise linear model for diodes.

Question 1 (10 points)

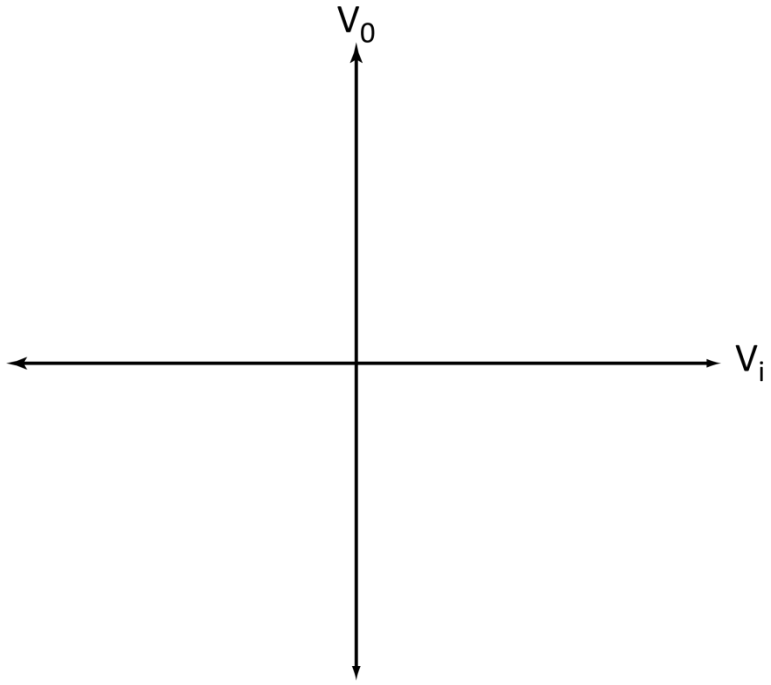
R=1 kΩ, and V_{D0}=0.7 V

(a) Find the transfer function (v_o for all possible v_i) for the following circuit:



(b) Sketch the transfer function.

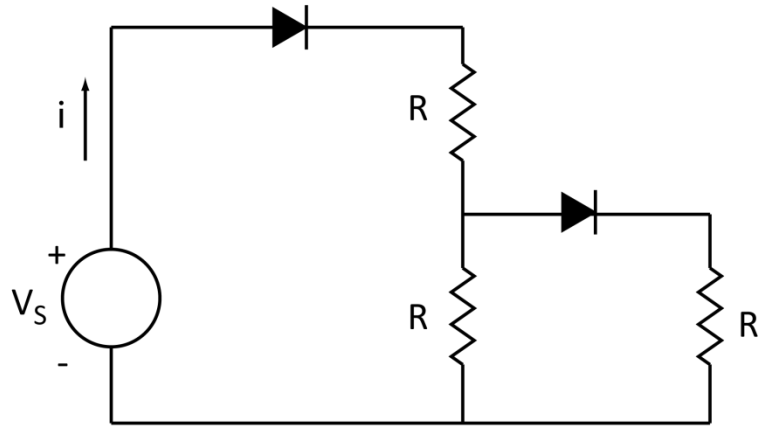
Indicate the values of V_i or V_o at any points where the slope is discontinuous.



Question 2 (10 points)

R=1kΩ, V_S=6 V, and V_{DO}=0.7 V

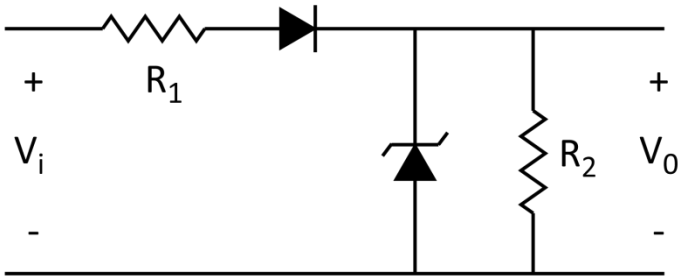
Find the current, i, labeled in the circuit below:



Question 3 (10 points)

R_1=3kΩ, R_2=1kΩ, V_{DO}=0.7 V, and V_Z=4 V

(a) Find the transfer function for the circuit below:



(b) Sketch the transfer function.
Indicate the values of V_i or V_o at any points where the slope is discontinuous.