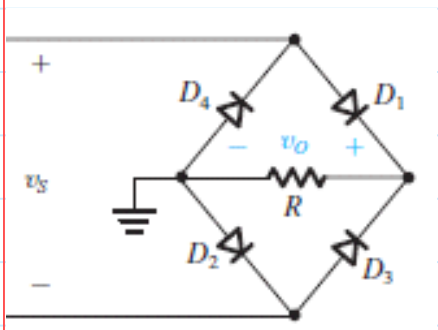
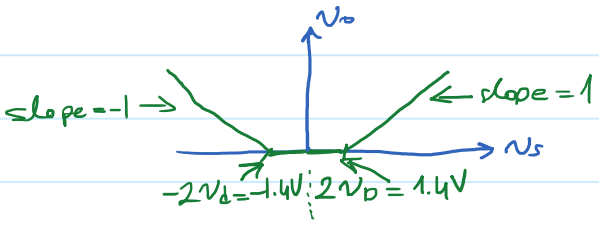
Q1



Draw the transfer characteristic of the given full-wave rectifier.

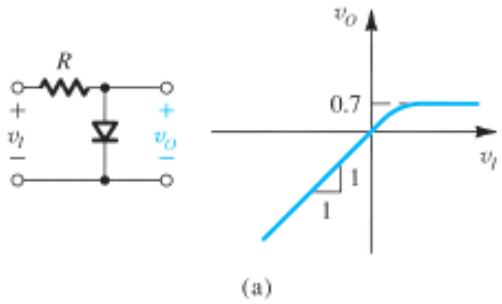
If $v_S > 2V_D \approx 1.4V$ then $v_O = v_S - 2v_D$

If $v_S < -2V_D \approx -1.4V$ then $v_O = v_S + 2v_D$

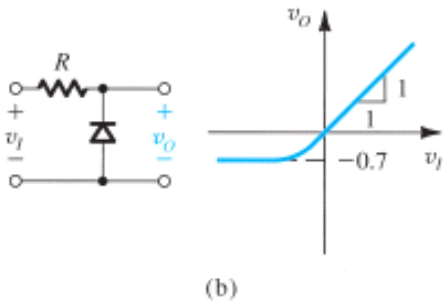


Q2

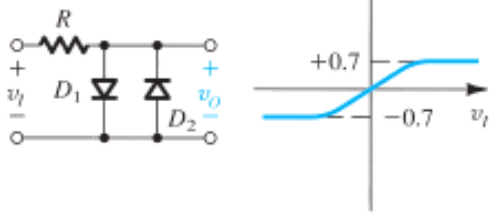
For the given circuits draw the transfer characteristics.



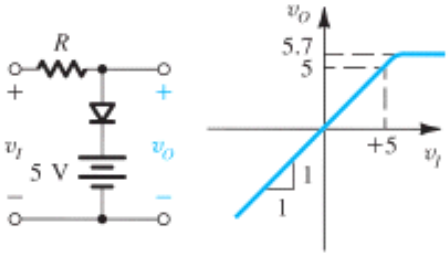
(a)



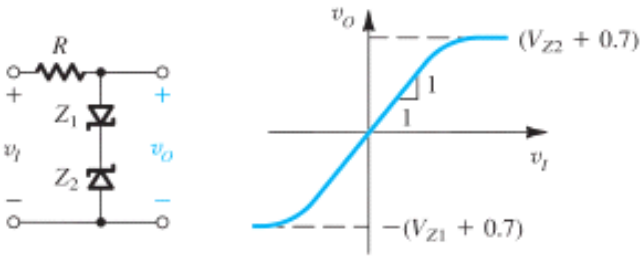
(b)



(c)



(d)



(e)

Q3

4.90 Sketch and clearly label the transfer characteristic of the circuit in Fig. P4.90 for $-15\,\text{V} \le v_I \le +15\,\text{V}$. Assume that

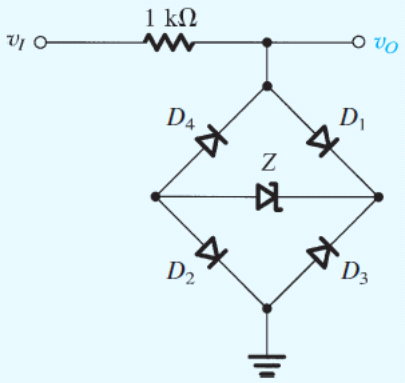


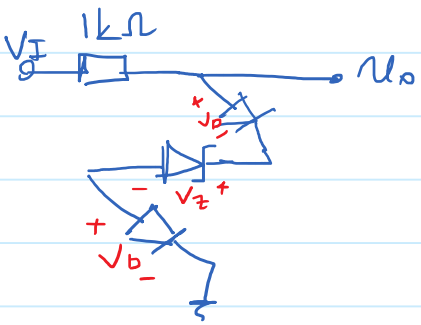
Figure P4.90

Assuming a voltage drop of v_D when the diodes are forward biased.

The zener potential is V_Z.

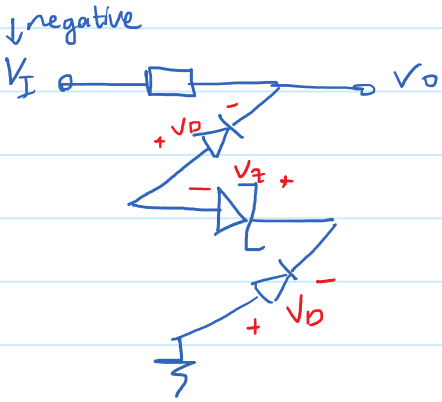
If $v_I > 2v_D + V_Z$

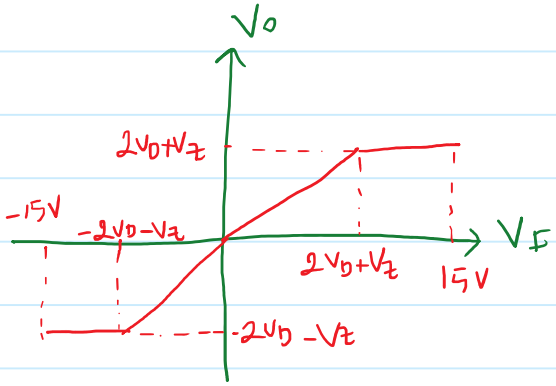
then $v_o = 2v_D + V_Z$



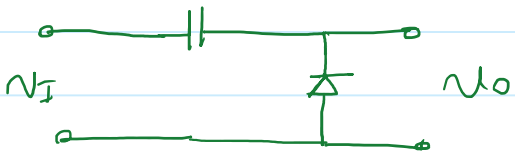
If $v_I < -(2V_D + V_Z)$

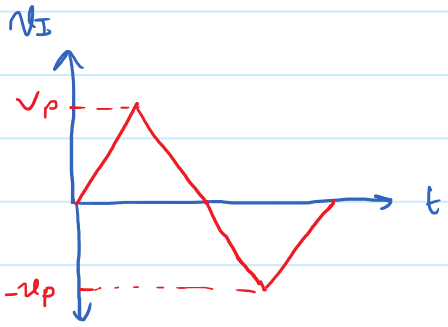
then $v_o = -2V_D - V_Z$





Q4





Plot t vs v_o. (Assume diode is ideal)