Problem A

The voltage transfer characteristics \( V_o \) vs. \( V_i \) is

1. Sketch \( V_o \) vs. \( V_i \) \((+)= 2 + 3 \sin wt\)

2. Design a simple diode circuit that results in the voltage transfer characteristics shown.

Use ideal diodes.

Problem B

In the circuit shown, a 5V Zener diode with \( R_s = 0 \) provides regulation for \( 50 \text{mA} \leq I_i \leq 1 \text{A} \)

\( R_s = 4.75 \) and \( V_o \) varies between 7.5V and 10V.

Find the range of \( I_i \) for which regulation is achieved.

Problem C

The diodes in the circuit shown turn on with \( V_o = 0.6 \text{V} \)

Find \( V_o \) for:

a) \( V_i = V_o = 5 \text{V} \)

b) \( V_i = 5 \text{V} \), \( V_o = 0 \)

c) \( V_i = 0 \), \( V_o = 5 \text{V} \)

d) \( V_i = V_o = 0 \)