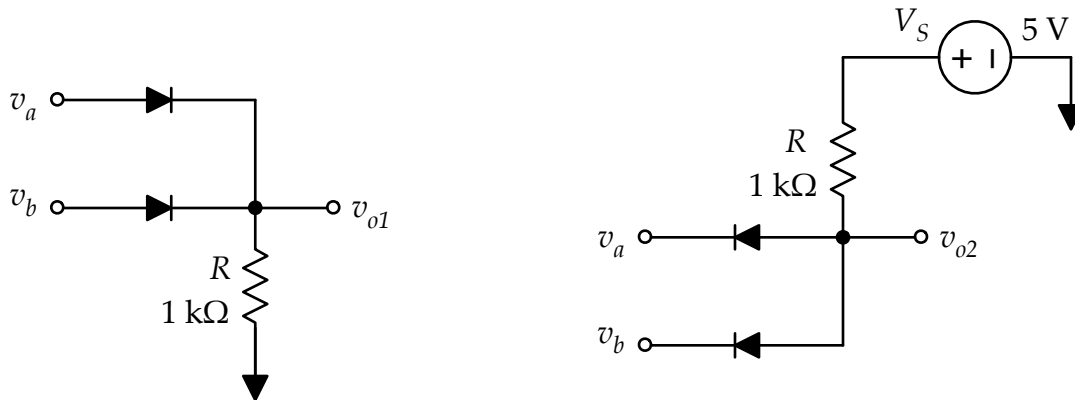


For each of the two circuits shown below,  $v_a$  and  $v_b$  are input voltages that can either 0 V or 5 V. They represent digital logic levels where the binary 0 is represented by any voltage between 0 and 1.5 V and binary 1 is represented by any voltage between 3.5 V and 5 V.

For each of the circuits, calculate the output voltage ( $v_{o1}$  in the first and  $v_{o2}$  in the second) for all combinations of  $v_a$  and  $v_b$ . Use your results to fill in the table. The output voltages are defined with respect to ground.

For those of you who have taken (or are taking) CprE 281, what logic functions do these two circuits implement? (Don't be concerned if you haven't taken CprE 281. You will get full credit by completing the table. However, you might want to consult with your friends who have taken 281 and have them explain what is going on here.)



$v_a$	$v_b$	$v_{o1}$	$v_{o2}$
0 V	0 V		
0 V	5 V		
5 V	0 V		
5 V	5 V		