Priority Encoders

Part A Complete the following truth table for a priority encoder. Assume the priority order (from highest to lowest) is IN_2, IN_0, IN_3, IN_1.

IN_3	IN_2	IN_1	IN_0	OUT_1	OUT_0	$Valid$
0	0	0	0	X	X	0
X	0	X	1	0	0	1
0	0	1	0	0	1	1
X	1	X	X	1	0	1
1	0	X	0	1	1	1

Part B Implement the following priority encoder using basic gates (AND, OR, NAND, NOR, and NOT). Label all inputs and outputs.

IN_3	IN_2	IN_1	IN_0	OUT_1	OUT_0	$Valid$
0	0	0	0	X	X	0
X	X	X	1	0	0	1
X	X	1	0	0	1	1
X	1	0	0	1	0	1
1	0	0	0	1	1	1