→ 9-1. Refer to Figure 9-3. Determine the levels at each decoder output for the following sets of input conditions.

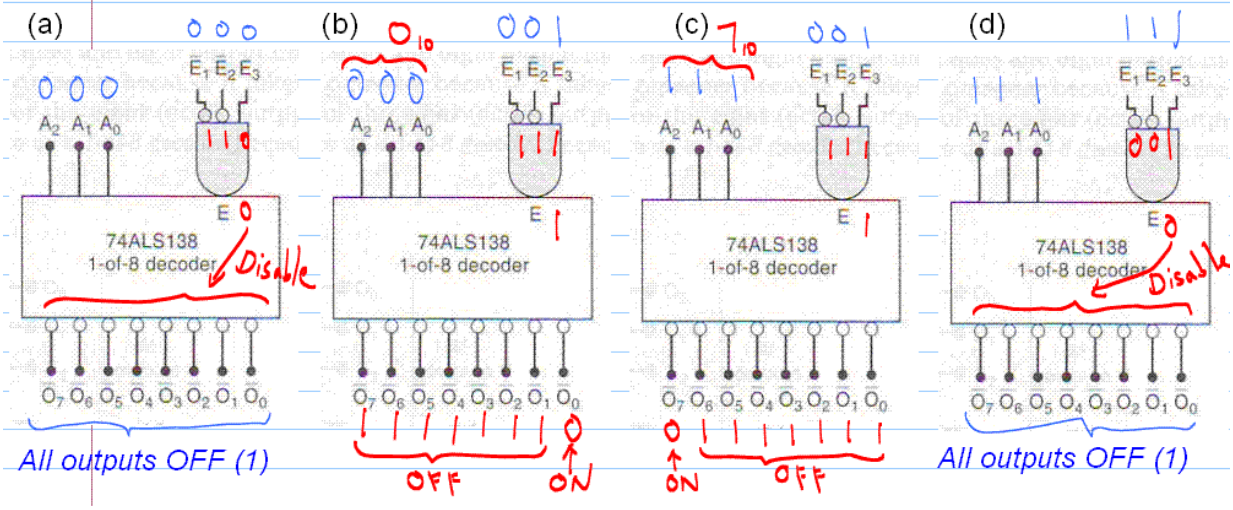
(a) All inputs LOW

(b) All inputs LOW except E_3 = HIGH

(c) All inputs HIGH except $\overline{E}_1 = \overline{E}_2$ = LOW

(d) All inputs HIGH

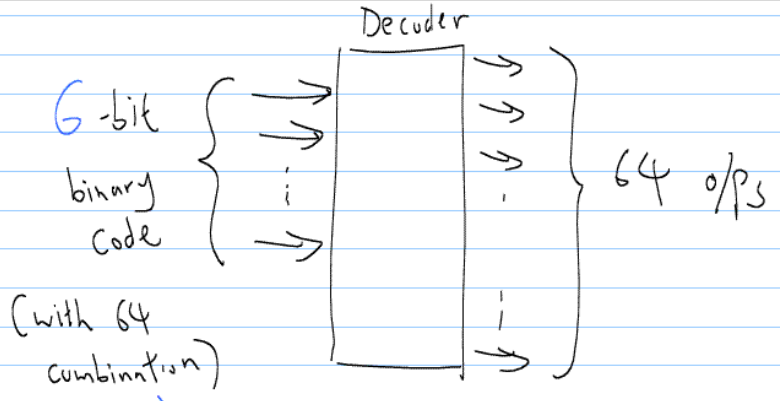
05/01/2010



→ 9-2. What is the number of inputs and outputs of a decoder that accepts 64 different input combinations?

Note Title

09/01/2009



Each combination will make 1 of the o/ps ON (while the other o/ps are OFF).

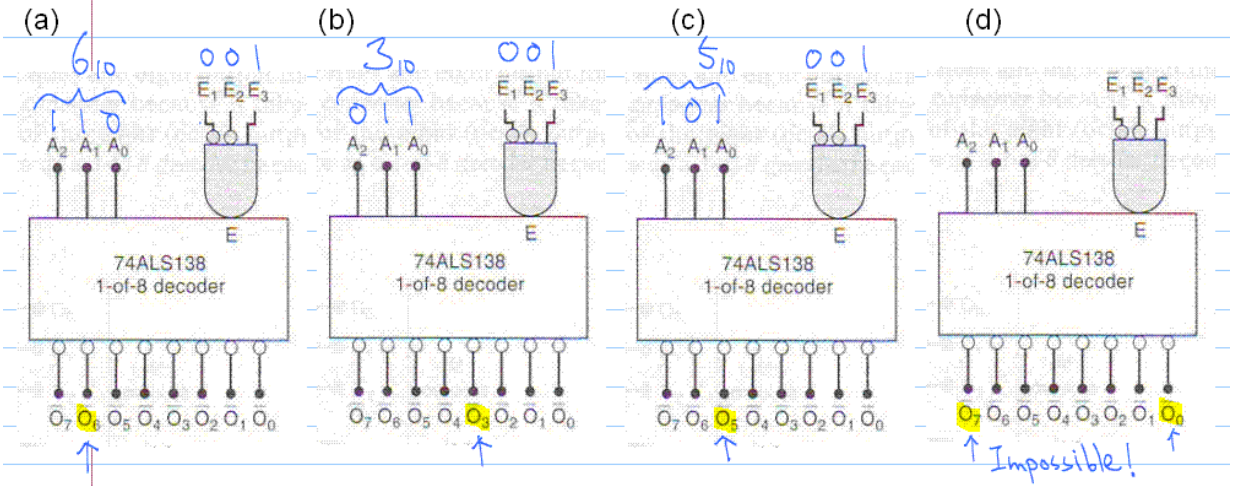
9-3. For a 74ALS138, what input conditions will produce the following outputs:

(a) LOW at $\overline{O}_6$

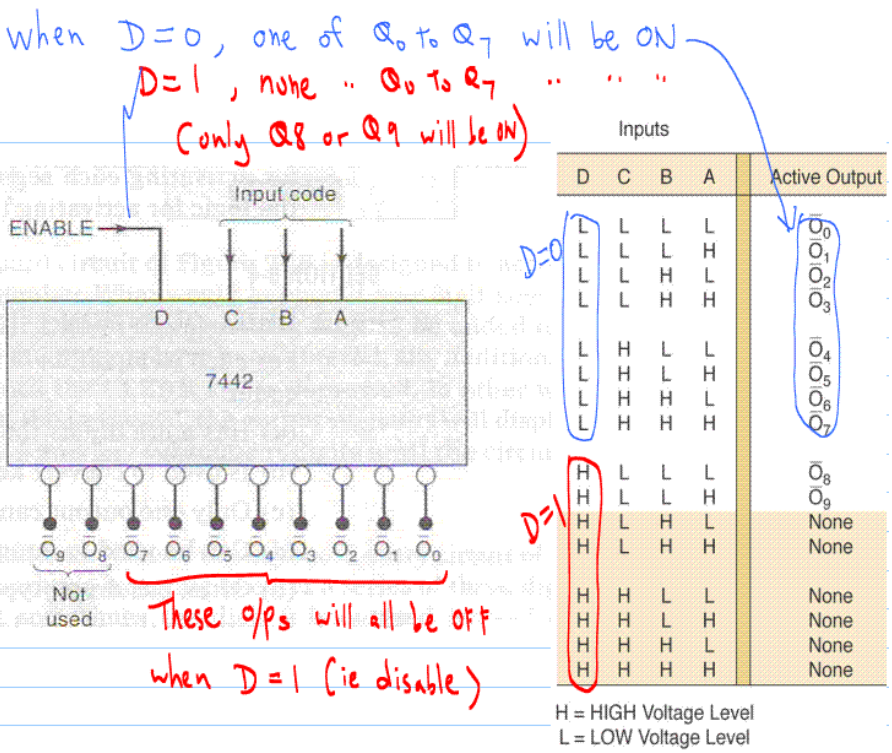
(b) LOW at $\overline{O}_3$

(c) LOW at $\overline{O}_5$

(d) LOW at $\overline{O}_0$ and $\overline{O}_7$, simultaneously



9-7
Connect 7442 as a 1-of-8 decoder.



→9-13. DRILL QUESTION

For each item, indicate whether it is referring to a decoder or an encoder.

(a) Has more inputs than outputs. Encoder

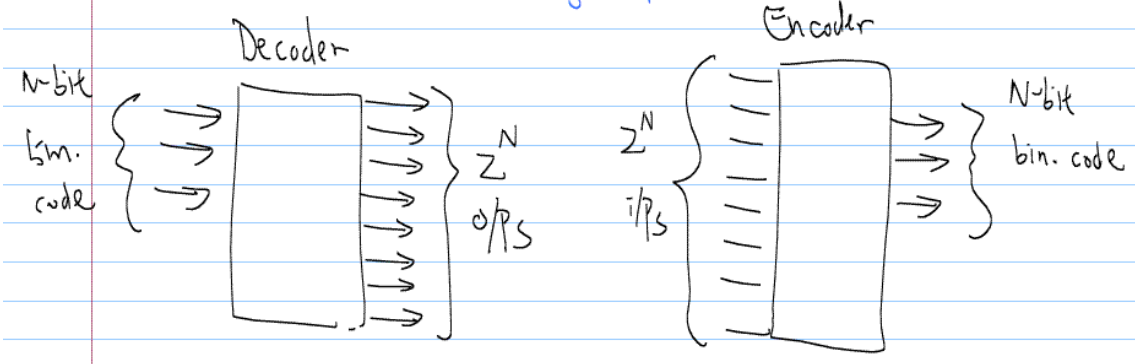
(b) Is used to convert key actuations to a binary code. Encoder

(c) Only one output can be activated at one time. Decoder

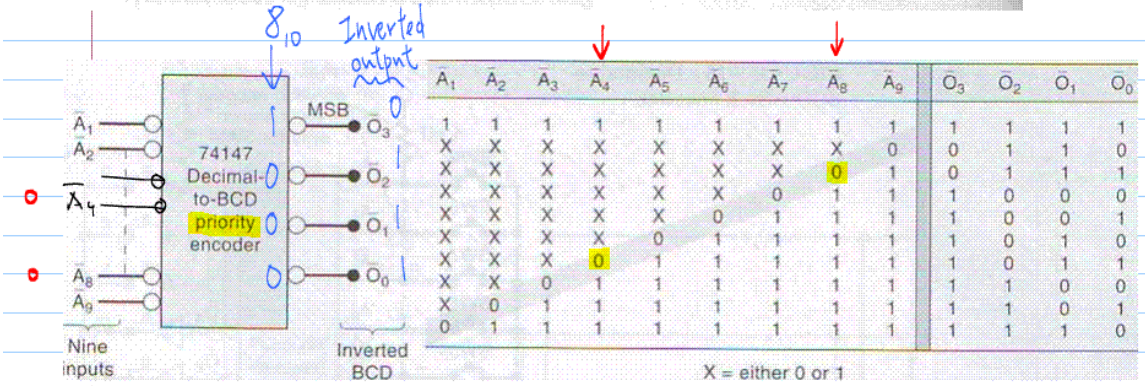
(d) Can be used to interface a BCD input to an LED display. Encoder (Sect. 9-2 P.470 — not covered)

(e) Often has driver-type outputs to handle large I and V. Decoder

ie current or voltage amplifier



→9-14. Determine the output levels for the 74147 encoder when $\overline{A}_8 = \overline{A}_4 = 0$ and all other inputs are HIGH.



$\overline{A}_1$	$\overline{A}_2$	$\overline{A}_3$	$\overline{A}_4$	$\overline{A}_5$	$\overline{A}_6$	$\overline{A}_7$	$\overline{A}_8$	$\overline{A}_9$	$\overline{O}_3$	$\overline{O}_2$	$\overline{O}_1$	$\overline{O}_0$
1	1	1	1	1	1	1	1	1	1	1	1	1
X	X	X	X	X	X	X	X	0	0	1	1	0
X	X	X	X	X	X	X	0	1	0	1	1	1
X	X	X	X	X	X	0	1	1	1	0	0	0
X	X	X	X	X	0	1	1	1	1	0	0	1
X	X	X	X	0	1	1	1	1	1	0	1	0
X	X	X	0	1	1	1	1	1	1	0	1	1
X	X	0	1	1	1	1	1	1	1	1	0	0
X	0	1	1	1	1	1	1	1	1	1	0	1
0	1	1	1	1	1	1	1	1	1	1	1	0

X = either 0 or 1

Since $\overline{A}_8$ has higher priority than $\overline{A}_4$, the output will give the inverted version of 8 ($1000_2 \rightarrow 0111_2$)

(1000_2: 8_{10}; 0111_2: Inverted)