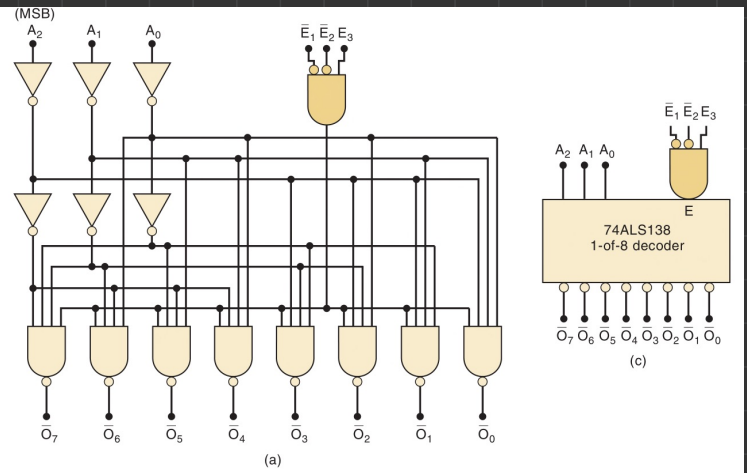
9-1

(a) High.

(b) $\overline{O_0}$

(c) $\overline{O_7}$

(d) High



$\overline{E}_1$	$\overline{E}_2$	E_3	Outputs
0	0	1	Respond to input code $A_2A_1A_0$
1	X	X	Disabled – all HIGH
X	1	X	Disabled – all HIGH
X	X	0	Disabled – all HIGH

(b)

9-2 $64 = 2^6$

Inputs are 6, outputs are 64

9-3 (a) $\overline{E_1} = \overline{E_2} = 0$ $E_3 = 1$ $A_2A_1A_0 = 110$

(b) $\overline{E_1} = \overline{E_2} = 0$ $E_3 = 1$ $A_2A_1A_0 = 011$

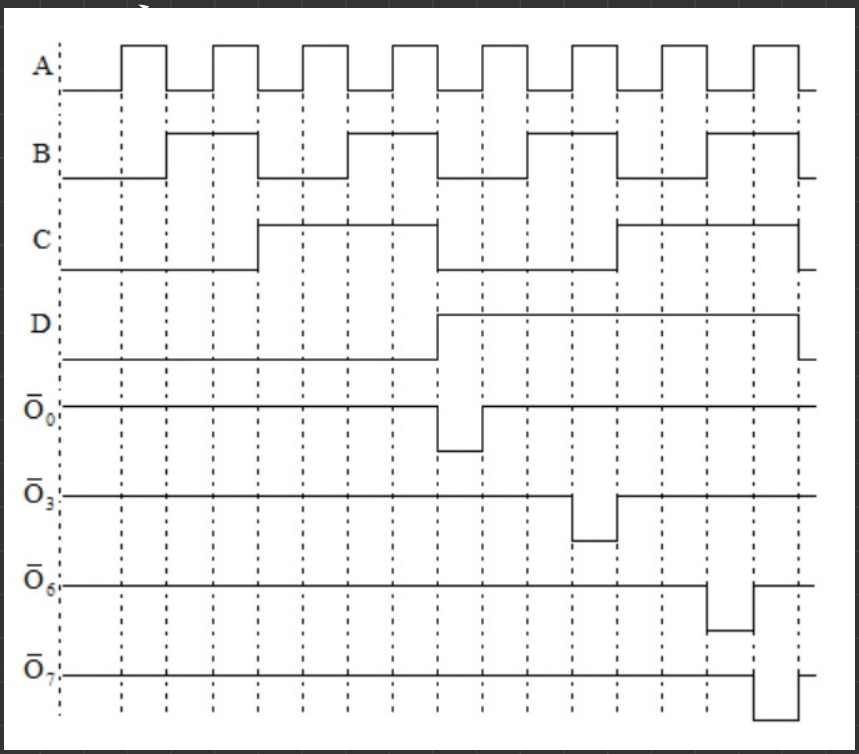
(c) $\overline{E_1} = \overline{E_2} = 0$ $E_3 = 1$ $A_2A_1A_0 = 101$

(d) No solution.

9-8

$\overline{O_0} = t_8 - t_9 = 0$ $\overline{O_3} = t_{11} - t_{12} = 0$

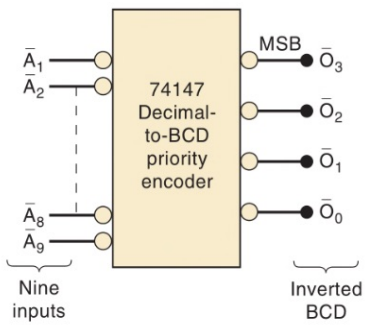
$\overline{O_6} = t_{14} - t_{15} = 0$ $\overline{O_7} = t_{15} - t_{16} = 0$



9-13 (a) encoder (b) encoder (c) decoder

(d) encoder (e) decoder

9-14

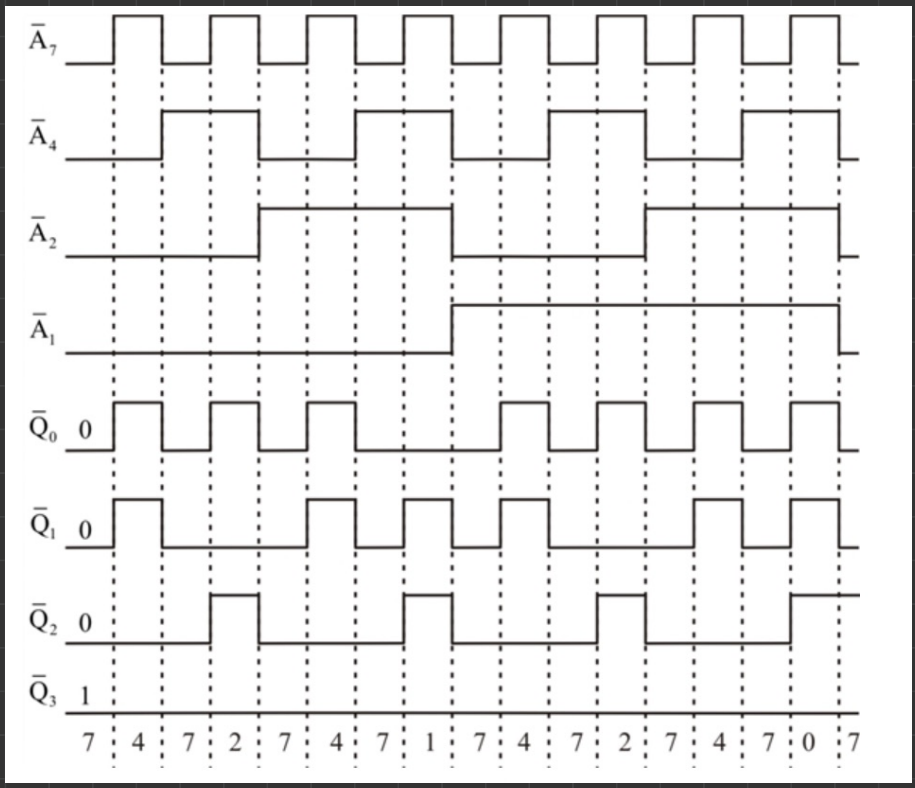


$\bar{A}_1$	$\bar{A}_2$	$\bar{A}_3$	$\bar{A}_4$	$\bar{A}_5$	$\bar{A}_6$	$\bar{A}_7$	$\bar{A}_8$	$\bar{A}_9$	$\bar{O}_3$	$\bar{O}_2$	$\bar{O}_1$	$\bar{O}_0$
1	1	1	1	1	1	1	1	1	1	1	1	1
X	X	X	X	X	X	X	X	0	0	1	1	0
X	X	X	X	X	X	X	0	1	0	1	1	1
X	X	X	X	X	X	0	1	1	1	0	0	0
X	X	X	X	X	0	1	1	1	1	0	0	1
X	X	X	X	0	1	1	1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

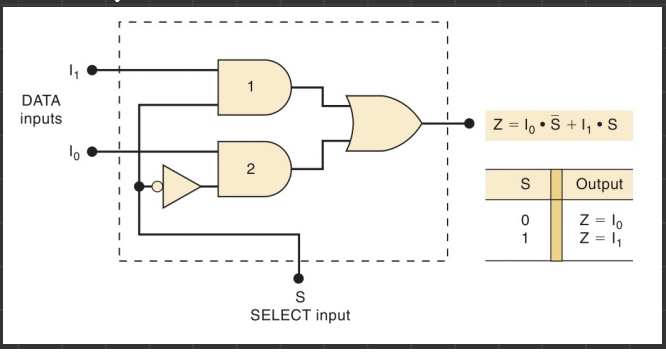
X = either 0 or 1

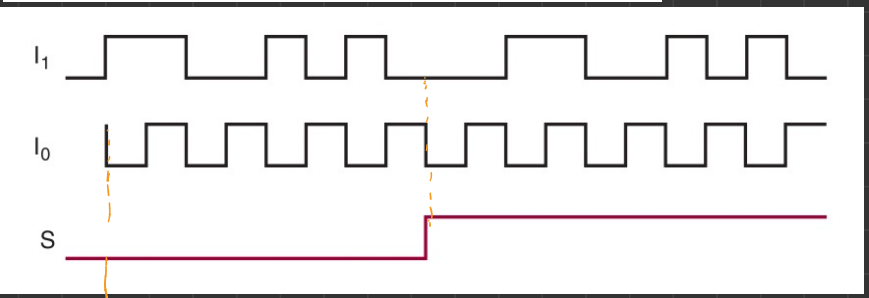
$\bar{A}_8 \rightarrow 0111$

9-15



9-27





Z

9-29

$$z_1 = I_0\bar{S}_1 + I_1 S_1 \qquad z_2 = I_2\bar{S}_1 + I_3 S_1$$

$$z = z_1\bar{S}_0 + z_2 S_0$$

$$= (I_0\bar{S}_1 + I_1 S_1)\bar{S}_0 + (I_2\bar{S}_1 + I_3 S_1)S_0$$

9-35 method ①

A	B	C	Z
0	0	0	1
0	0	1	1
0	1	0	1
0	1	1	1
1	0	0	1
1	0	1	1
1	1	0	1
1	1	1	1

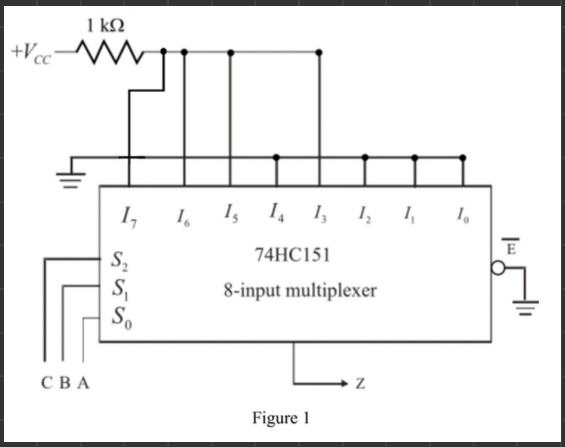


Figure 1

method ②

$$Z = AB(C+\overline{C}) + (A+\overline{A})BC + A(B+\overline{B})C$$

$$= ABC + AB\overline{C} + ABC + \overline{A}BC + ABC + A\overline{B}C$$

$$= ABC + AB\overline{C} + \overline{A}BC + A\overline{B}C$$

$$= AB(1) + \overline{A}BC + A\overline{B}C + \overline{A}\overline{B}(0)$$

$$= AB(1) + \overline{A}BC + A\overline{B}C + \overline{A}\overline{B}(0)$$

9-39

(a) encoder, MUX

(b) MUX, DEMUX

(c) MUX

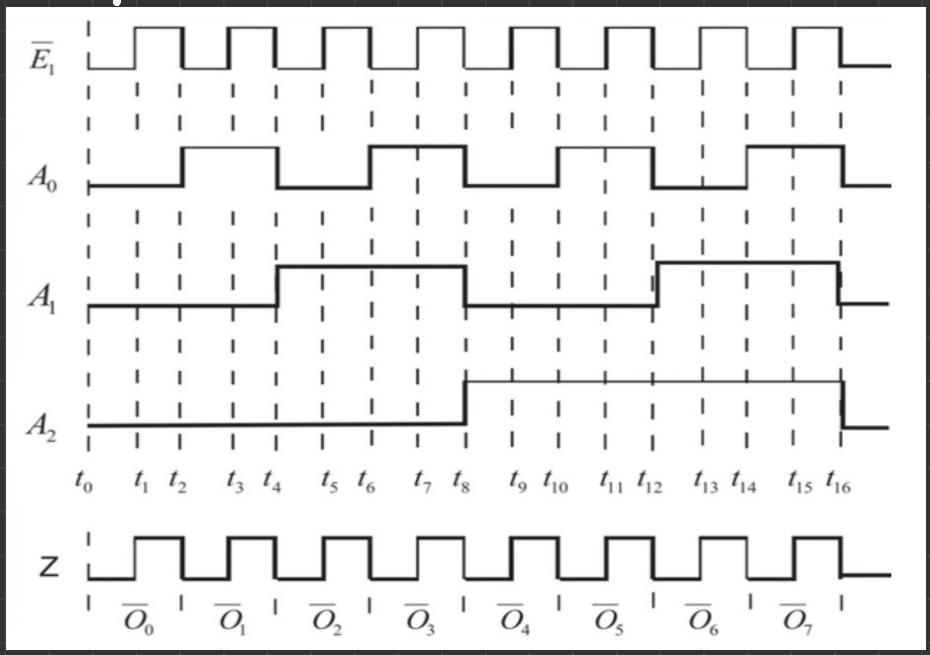
(d) decoder

(e) decoder, DEMUX

(f) DEMUX

(g) MUX

9-41


$\overline{E_1}$
A_0
A_1
A_2
t_0 t_1 t_2 t_3 t_4 t_5 t_6 t_7 t_8 t_9 t_{10} t_{11} t_{12} t_{13} t_{14} t_{15} t_{16}
Z
$\overline{O_0}$ $\overline{O_1}$ $\overline{O_2}$ $\overline{O_3}$ $\overline{O_4}$ $\overline{O_5}$ $\overline{O_6}$ $\overline{O_7}$