

حل تمرین سری نیم درین مدار منطقی

پاسخ سوال ۱ :

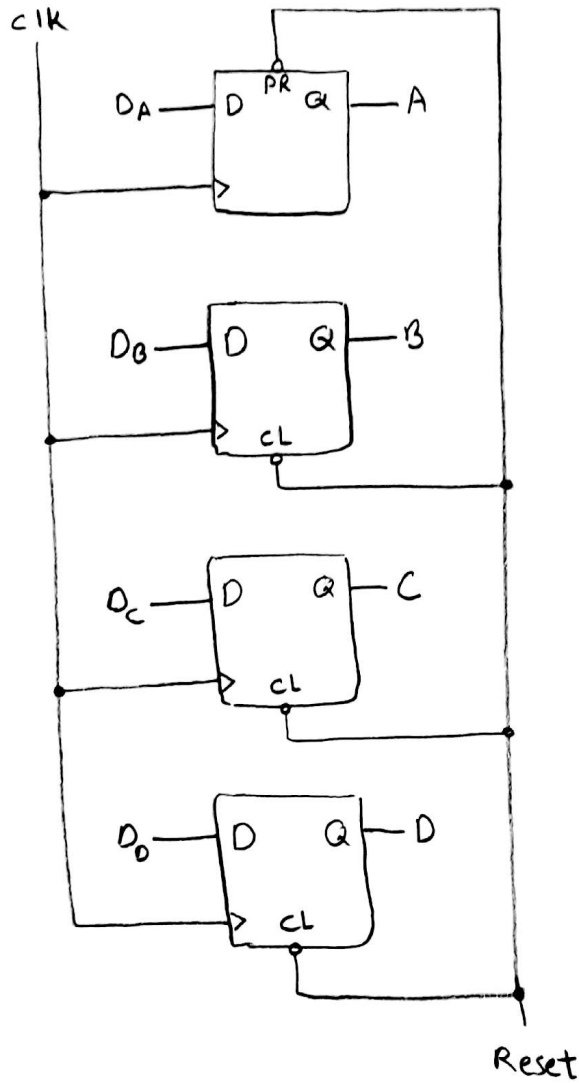
الف)

$$D_A = A\bar{x} + D$$

$$D_B = Ax + B\bar{x}\bar{y} + c\bar{y}$$

$$D_C = Bx\bar{y} + By\bar{z}$$

$$D_D = Byz + Cy$$

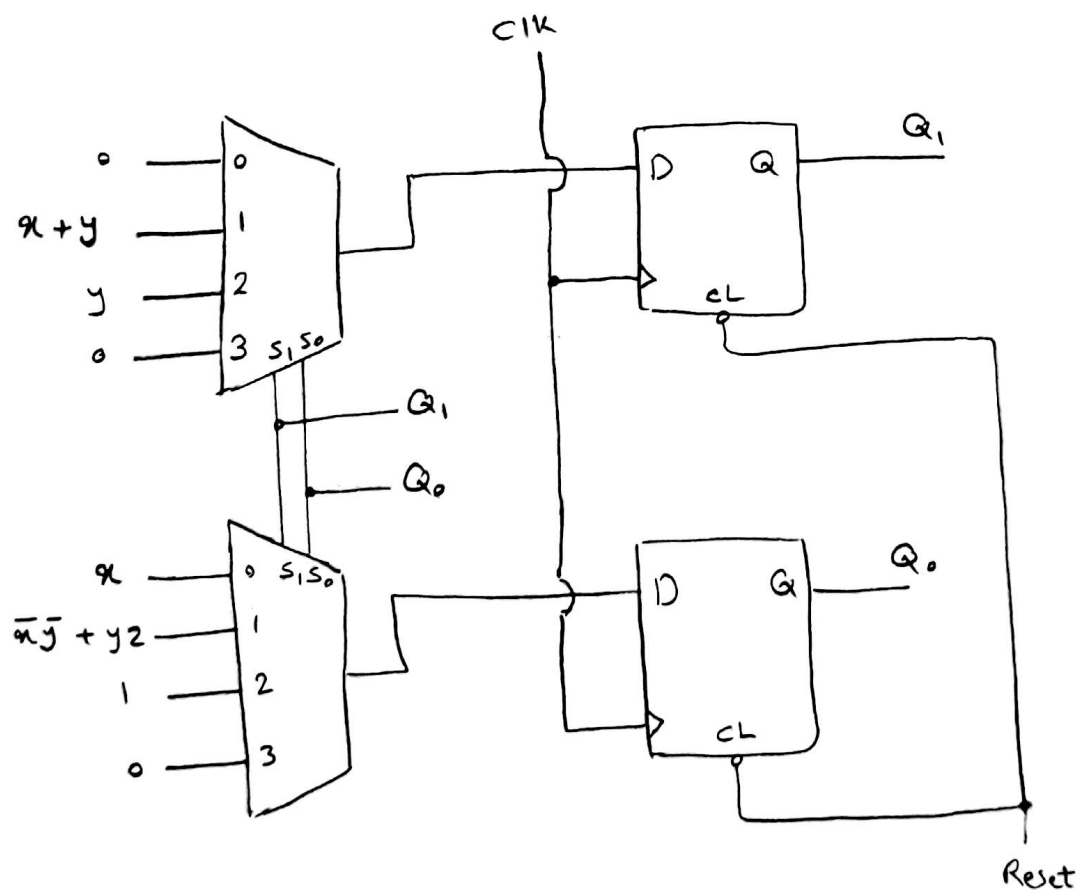


خروجی ها :

$$out1 = B + c\bar{y}$$

$$out2 = D + By$$

ب)	P.S	N.S	Max	
	$Q_1 Q_0$	$Q_1^+ Q_0^+$	$Mux1$	$Mux0$
A	0 0	0 0 0 1	\bar{x} x	$I_0 = 0$ $I_0 = x$
B	0 1	0 1 1 0 1 1	$\bar{x} \bar{y}$ $x \bar{y} + y \bar{z}$ $y z$	$I_1 = x \bar{y} + y \bar{z} + y z$ $I_1 = \bar{x} \bar{y} + y z$ $= x \bar{y} + y = x + y$
C	1 0	0 1 1 1	\bar{y} y	$I_2 = y$ $I_2 = 1$
D	1 1	0 0	—	$I_3 = 0$ $I_3 = 0$



خرجی ها %

$$out1 = \bar{Q}_1 Q_0 + Q_1 \bar{Q}_0 \bar{y}$$

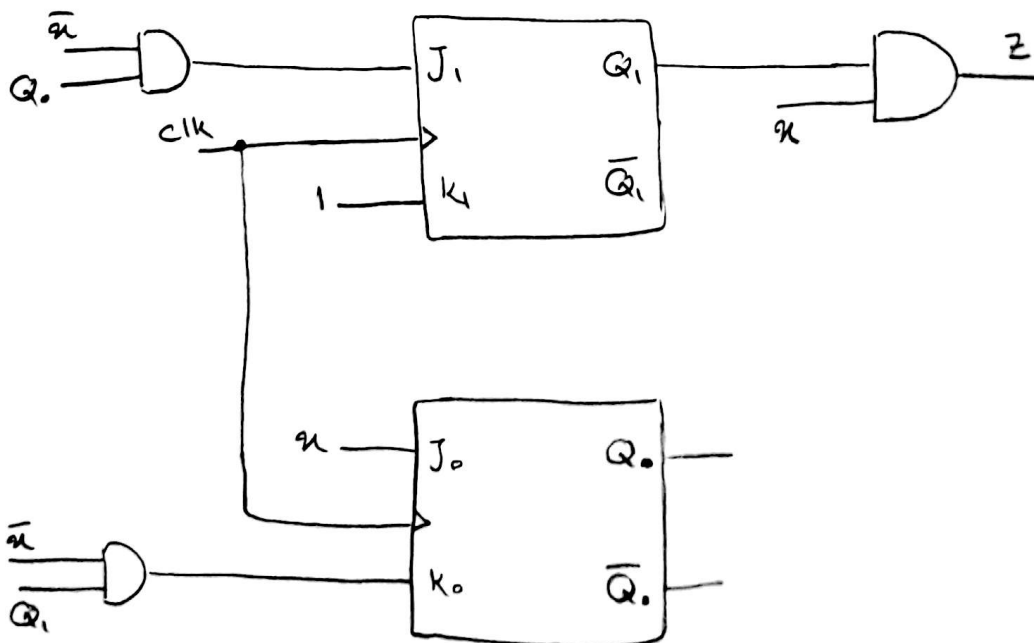
$$out2 = \bar{Q}_1 Q_0 y + Q_1 Q_0$$

Present state	P.S Q_1, Q_0	Input x	N.S Q_1^+, Q_0^+	FF inputs J_1, K_1, J_0, K_0	output Z
T_0	0 0	0	0 0	0 x 0 x	0
	0 0	1	0 1	0 x 1 x	0
T_1	0 1	0	1 1	1 x x 0	0
	0 1	1	0 1	0 x x 0	0
T_2	1 1	0	0 0	x 1 x 1	0
	1 1	1	0 1	x 1 x 0	1

$$\begin{cases} J_1 = \bar{x} Q_0 \\ K_1 = 1 \end{cases}$$

$$\begin{cases} J_0 = x \\ K_0 = \bar{x} Q_1 \end{cases}$$

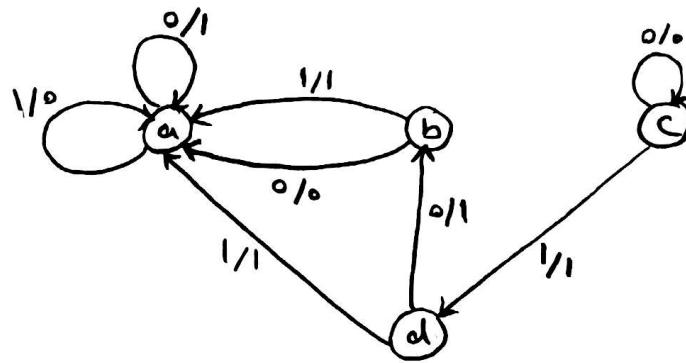
$$\text{output : } Z = Q_1 x$$



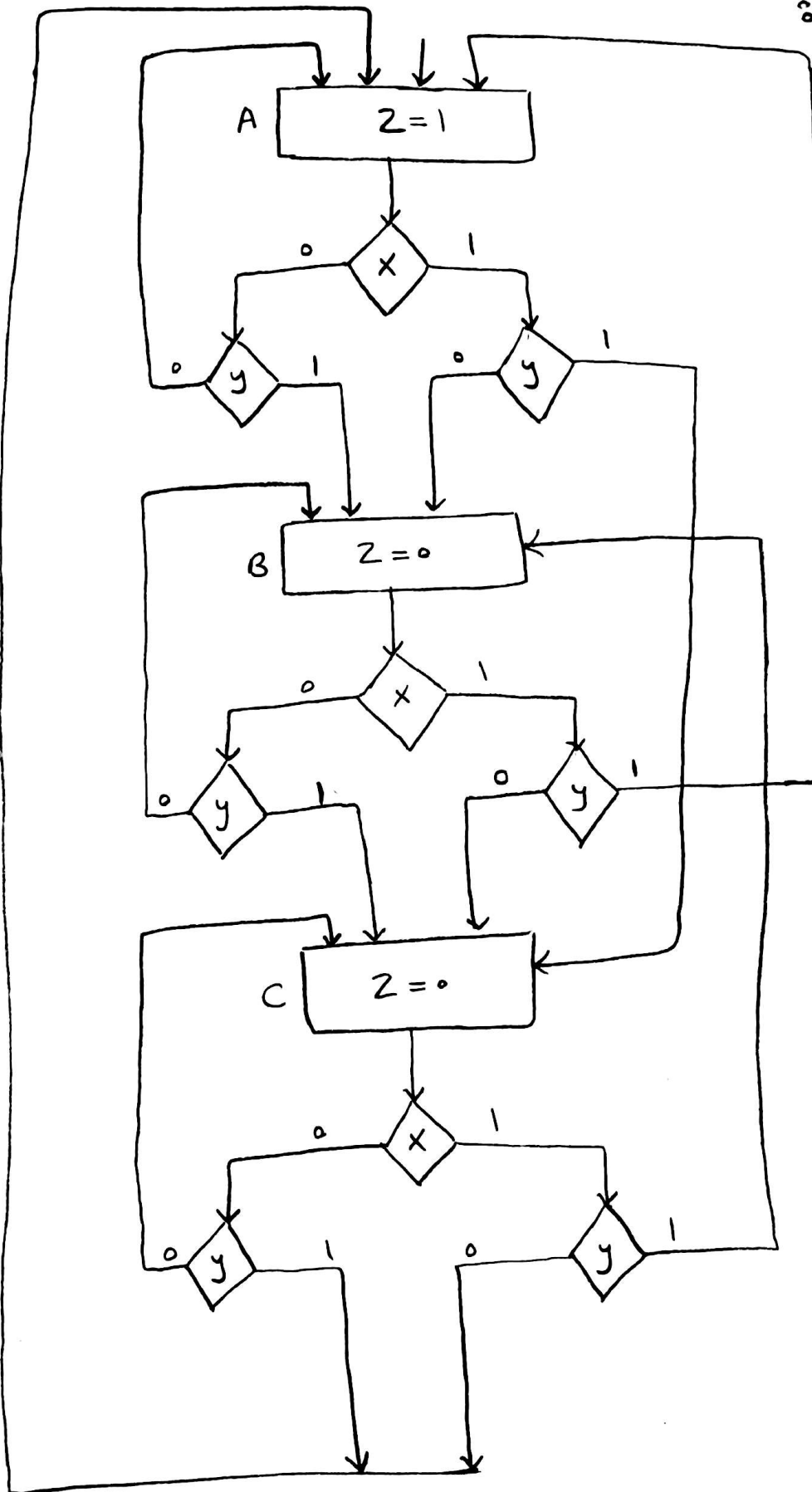
P.S	M.S		output	
	x=0	x=1	x=0	x=1
a	a	f	1	0
b	f	e	0	1
c	c	d	0	1
d	b	f	1	1
e	e	f	1	0
f	e	a	1	0

(a, e, f), b, c, d

b	x				
c	x	c, f, x			
d	x	x	x		
e	✓	x	x	x	
f	✓	x	x	x	✓
	a	b	c	d	e



مدار از نوع میس است زیرا
خروجی هم به حالت فعلی بستگی دارد
و هم به ورودی -



P.S		input			N.S		output		
A	B	x ₁	x ₂	x ₃	A ⁺	B ⁺	z ₁	z ₂	z ₃
0	0	0	0	0	0	0	1	1	0
		0	0	1	0	0	1	1	0
		0	1	0	0	1	1	1	0
		0	1	1	0	1	1	1	0
		1	0	0	0	1	1	0	1
		1	0	1	1	0	1	0	1
		1	1	0	0	1	1	0	1
		1	1	1	1	0	1	0	1
0	1	0	0	0	0	1	0	0	1
		0	0	1	0	1	0	0	1
		0	1	0	0	1	0	0	1
		0	1	1	0	1	0	0	1
		1	0	0	1	0	0	0	0
		1	0	1	1	0	0	0	0
		1	1	0	1	0	0	0	0
		1	1	1	1	0	0	0	0
1	0	0	0	0	0	1	0	1	0
		0	0	1	0	1	0	1	0
		0	1	0	0	0	0	1	0
		0	1	1	0	0	0	1	0
		1	0	0	0	1	0	1	0
		1	0	1	0	1	0	1	0
		1	1	0	0	0	0	1	0
		1	1	1	0	0	0	1	0

جانتے ہو کہ حالات معادلات درج ذیل میں آکر ہیں :

$$D_A = A^+ = Bx_1 + \bar{A}x_1x_3$$

$$D_B = B^+ = B\bar{x}_1 + Ax_2 + \bar{A}\bar{x}_1\bar{x}_2 + \bar{A}\bar{B}x_1\bar{x}_3$$

$$Z_1 = \bar{A}\bar{B}$$

$$Z_2 = A + \bar{B}x_1$$

$$Z_3 = \bar{A}\bar{B}x_1 + \bar{A}B\bar{x}_1$$

