INSTITUTE OF INFORMATION TECHNOLOGY

JAHANGIRNAGAR UNIVERSITY

Final Assignment

Course Tittle : Digital Logic Design

Course Code : ICT – 2103

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Answer to the question no – 1

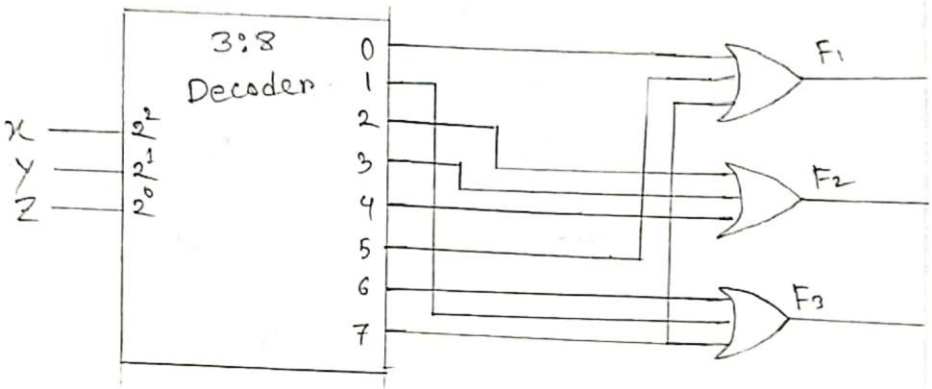
Given that

$$F_1 = x'y'z' + xz$$
$$= x'y'z' + x(y+y')z$$
$$= x'y'z' + xyz + xy'z$$
$$= \Sigma(0,7,5)$$

$$F_2 = xy'z' + x'y$$
$$= xy'z' + x'y(z+z')$$
$$= xy'z' + x'yz + x'yz'$$
$$= \Sigma(4,3,2)$$

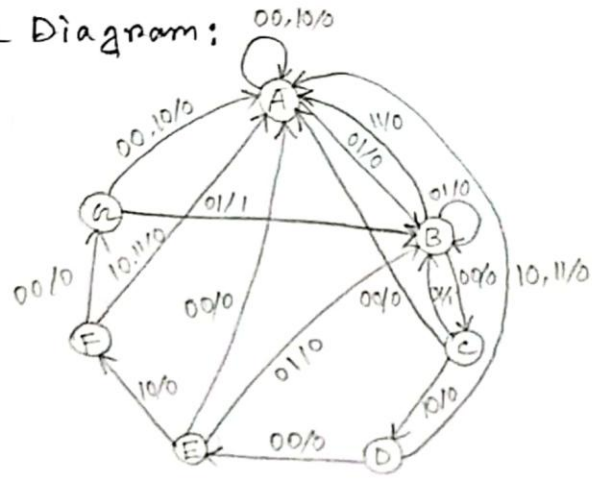
$$F_3 = x'y'z + xy$$
$$= x'y'z + xy(z+z')$$
$$= x'y'z + xyz + xyz'$$
$$= \Sigma(1,7,6)$$

circuit :



Answer to the question no – 2

State Diagram:



Primitive flow table:

Present State	Next State, output z for x y inputs			
	00	01	10	11
A	(A), 0	B, 0	(A), 0	–
B	C, 0	(B), 0	–	A, 0
C	A, 0	B, 0	D, 0	–
D	E, 0	–	A, 0	A, 0
E	A, 0	B, 0	F, 0	–
F	G, 0	–	A, 0	A, 0
G	A, 0	B, 1	A, 0	

Answer to the question no - 3

i) logical diagram:

D flip-flop means delay flip-flop which Provide delay for some time and give output same as input. Next state and input of flip-flop are equal.

x is input and y is output

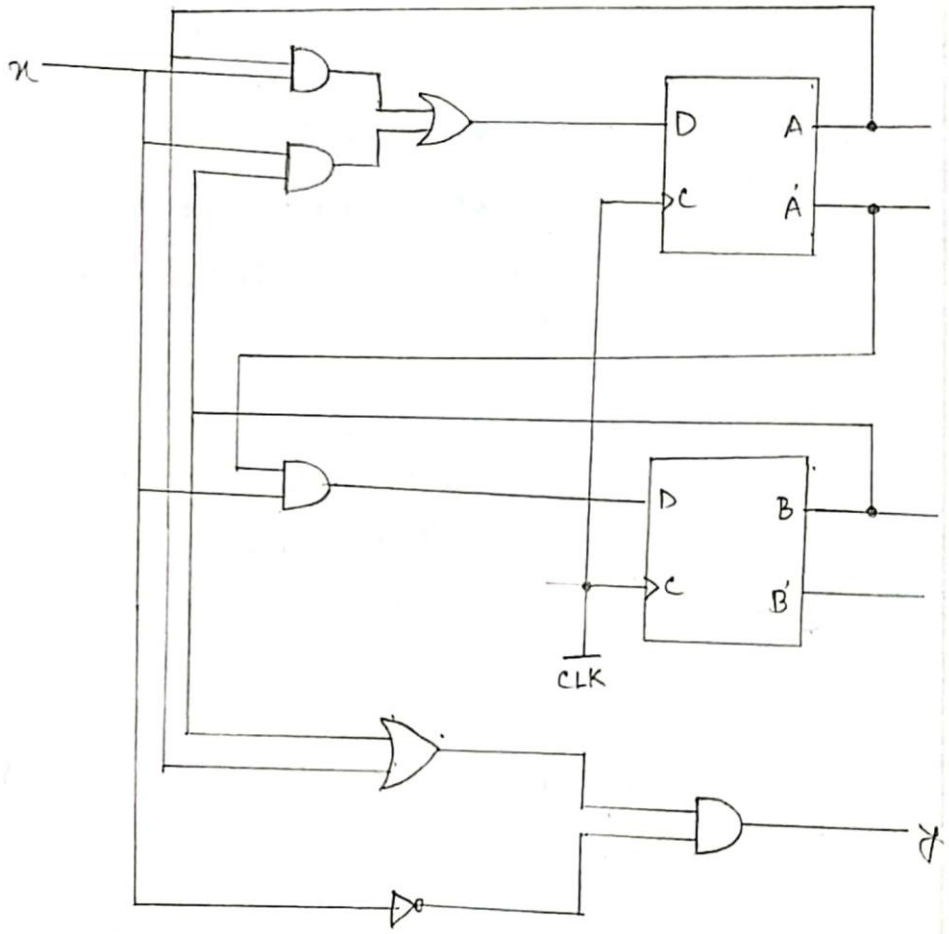
$$A(t+1) = Ax + Bx$$

$$B(t+1) = A'x$$

$$Y = (A+B)x'$$

$A(t+1)$, $B(t+1)$ are next states In D flip-flop to get the next states $A(t+1)$, $B(t+1)$ for A, B. we have to give next state value to D of D flip-flop so sequetial circuit will be:

Sequential circuit:



ii) State table:

In state table here four sections Present state input next state output list all Possible binary combination of Present state and input Determine next states and outputs from the logical diagram or from the state equation.

$$A(t+1) = Ax + Bx$$
$$B(t+1) = A'x$$
$$Y = (A+B)x'$$

m flip-flops and n inputs 2^{m+n} rows.

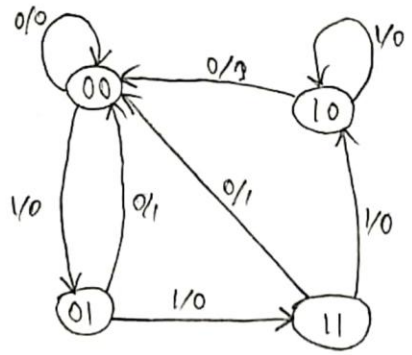
Present state		input	Next state		Output
A	B	(x)	A	B	(y)
0	0	0	0	0	0
0	0	1	0	1	0
0	1	0	0	0	1
0	1	1	1	1	0
1	0	0	0	0	1
1	0	1	1	0	0
1	1	0	0	0	1
1	1	1	1	0	0

iii) State Diagram:

Second form of the state tables

Present state	Next State		Output	
	$x=0$	$x=1$	$x=0$	$x=1$
AB	AB	AB	y	y
00	00	01	0	0
01	00	11	1	0
10	00	10	1	0
11	00	10	1	0

State diagram:



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