National University of Computer and Emerging Sciences, Lahore Campus

	Course:	Digital Logic Design Lab	Course Code:	EL227
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	Section:	B-2	Pages:	2

Question # 1

A sequential circuit with two D Flip-flops A and B, two inputs x and y, and one output z is specified by the following next-state and output equations.

$$A(t+1) = x'y + xB$$

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

$$z = A$$

a. Construct the state table that consists of the present state, inputs and next state.

b. Draw the corresponding state diagram.

c. Draw the logic diagram of sequential circuit.

d. Briefly explain the working of this sequential circuit i-e what does it actually do?

Solution

Present state		Inputs		Next state		Output
A	B	x	y	A	B	z
0	0	0	0	0	0	0
0	0	0	1	1	0	0
0	0	1	0	0	0	0
0	0	1	1	0	0	0
0	1	0	0	0	1	1
0	1	0	1	1	1	1
0	1	1	0	0	0	1
0	1	1	1	0	0	1
1	0	0	0	0	0	0
1	0	0	1	1	0	0
1	0	1	0	1	1	0
1	0	1	1	1	1	0
1	1	0	0	0	1	1
1	1	0	1	1	1	1
1	1	1	0	1	1	1
1	1	1	1	1	1	1

(c)