National University of Computer and Emerging Sciences, Lahore Campus

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	Duration:	30 Minutes	Total Marks:	20
	Paper Date:	11-09-2018	Weight	~3
	Exam Type:	Quiz 1c	Page(s):	2

Student : Name:_____ Roll No._____ Section:_____

Question 1 [10]

Using four bit number, multiply 3 x 5 using original multiplier circuit (without optimization) discussed in the class. Value of each register is initialized in the table below. List different steps that will be performed in each iteration and the resulting value of each register.

Iteration	Step	Multiplier	Multiplicand	Product
0	Initial values	0011	00000101	00000000
1				
2				
3				
4				

Question 2 [10]

Input	Present State		Next state	
x	$\mathbf{A_i}$	$\mathbf{B_i}$	$\mathbf{A_{i+1}}$	$\mathbf{B_{i+1}}$
0	0	0	0	1
0	0	1	1	0
0	1	0	0	1
0	1	1	1	0
1	0	0	0	0
1	0	1	1	1
1	1	0	0	0
1	1	1	0	0

The state table shows the transitions of a sequential circuit with two memory elements.
a) Write down the Boolean expressions describing the next state.
b) Draw the circuit using the expressions.