

KFUPM - COMPUTER ENGINEERING DEPARTMENT**EE-200 – Digital Logic Circuit Design (section 05)****Assignment # 4_a: Due Thursday Nov 26th, 2015 – in class.**

Problem	Points	Score
1	20	
2	10	
Total	30	

Problem 1 (20 points):

Consider a sequential circuit that has two D flip-flops A and B, two inputs, x and y; and one output z. The circuit is specified by the following next-state and output equations:

$$A(t+1) = xy' + xB$$

$$B(t+1) = xA + xB'$$

$$z = A$$

- Draw the logic diagram for the circuit
- Determine the type of the sequential circuit (Mealy vs Moore) and justify
- Write the state table for circuit
- Draw the corresponding state diagram

Problem 2 (10 points):

Consider the state table shown in Figure corresponding to a sequential circuit with one input X and one output Z.

- Draw the state diagram.
- Determine the output sequence for the following input sequence $X = 0001110$ (MSB first). Assume the circuit is started in state b.

Present State	X	Next State	Z
a	0	b	0
a	1	a	1
b	0	c	0
b	1	a	1
c	0	c	1
c	1	d	0
d	0	a	1
d	1	a	0