

Name, Surname :

Number :

Course Code :

Course Name :

Exam : Quiz Midterm Final

Date :20.01.2012

Please make sure to write your name and student number on each paper that you have used

Question Number	1	2	3	4	Total
Mark					

Note: Exam duration is 90 minutes only.

Questions

- 1- Design the sequential circuit specified by the state table of shown below,. using **JK flip-flops**

Present State		Input	Next State	
A	B		A	B
0	0	0	0	0
0	0	1	0	1
0	1	0	1	0
0	1	1	0	1
1	0	0	1	0
1	0	1	1	1
1	1	0	1	1
1	1	1	0	0

- 2- Design the 3 bit full adder with using **3x8 decoder** and **OR gates**
- 3- **(Bonus)** Draw a logic diagram **using only** two input- NOR to implement the following function:
- $$F(A, B, C, D) = (A \oplus B)' (C \oplus D)$$
- 4- Draw four-bit synchronous **binary counter**
- 5- Implement the following Boolean function with a **4 X 1 multiplexer** and external gates

$$F(A, B, C, D) = \sum(0, 2, 5, 7, 11, 14)$$