

King Fahd University of Petroleum and Minerals  
College of Computer Sciences and Engineering  
Department of Computer Engineering

COE 202 – Fundamentals of Computer Engineering (T061)

**Homework # 06 (due date & time: Monday 15/01/2007 during class period)**

\*\*\* Show all your work. No credit will be given if work is not shown! \*\*\*

**Problem # 1 (100 points):** Consider the Moore sequential machine in Figure 7 of lesson 4-5. Reconstruct the circuit using the “LogicWorks” tool by using only JK-FFs (part 74\_112) and combinational gates. From the table shown below, apply the input sequence next to your student ID to the input of the circuit (*note*: the most significant bit of the input sequence is applied first). Make sure that you first reset the states of the JK-FFs before you start applying the input sequence. Also, make sure that you apply each bit of the input sequence when the rising edge of the clock occurs (i.e. so that the input is ready when the falling edge of the clock occurs). Show both the reconstructed circuit, and the resulting timing diagram (i.e. show the *Clock*, *Clear*, *Input X*, and *Output Z* signals).

Student ID	Input to be used
226246	11111001
234025	11111000
234289	11110111
234361	11110110
236353	11110101
242346	11110100
242356	11110011
242480	11110010
242598	11110001
243580	11110000
243714	11101111
244040	11101110
244602	11101101
244638	11101100
245012	11101011
245050	11101010
245406	11101001
245796	11101000
246314	11100111
246342	11100110
246348	11100101
259463	11100100
259621	11100011