

EE-313 Synchronous Counter Worksheet

Name: _____ Section: _____

Design a BCD Synchronous Counter that sequences through the following states: 0, 4, 5, 7, 3, and 2. Use ABCD as your bit variables where A is the MSB and D is the LSB. Assume “Don’t Care” conditions.

Rules J K

0 → 0 0 X
 0 → 1 1 X
 1 → 0 X 1
 1 → 1 X 0

Current State				Next State				J _{Q3}	K _{Q3}	J _{Q2}	K _{Q2}	J _{Q1}	K _{Q1}	J _{Q0}	K _{Q0}
0	0	0	0												
0	0	0	1												
0	0	1	0												
0	0	1	1												
0	1	0	0												
0	1	0	1												
0	1	1	0												
0	1	1	1												
1	0	0	0												
1	0	0	1												
1	0	1	0												
1	0	1	1												
1	1	0	0												
1	1	0	1												
1	1	1	0												
1	1	1	1												

