

CPE 223 Lab 6 Worksheet

Objectives

- Test and investigate the operation of various types of flip-flops including D positive-edge-triggered flip-flop and JK master-slave flip-flop.
- Construct and test various ripple counter circuits.

Part I: D positive-edge-triggered flip-flop (7474)

D flip-flop Transition Table

Inputs				Outputs	
\overline{Preset}	\overline{Clear}	Clock	D	Q	\overline{Q}
0	1	x	x	1	0
1	0	x	x	0	1
0	0	x	x	1	1
1	1	\downarrow	0	0	1
1	1	\uparrow	1	1	0

Part II: JK master-slave flip-flop (7476)

JK flip-flop Transition Table

Inputs					Outputs	
\overline{Preset}	\overline{Clear}	Clock	J	K	Q	\overline{Q}
0	1	x	x	x	1	0
1	0	x	x	x	0	1
0	0	x	x	x	1	1
1	1	\downarrow	0	0	Q_{t-1}	\overline{Q}_{t-1}
1	1	\downarrow	0	1	0	1
1	1	\downarrow	1	0	1	0
1	1	\downarrow	1	1	\overline{Q}_{t-1}	Q_{t-1}

Part III: Ring Counter TA Comments/Signature: Lab 6 - 2A - 68

Part IV: BCD Counter TA Comments/Signature: Lab 6 - 2A - 68

Challenge: Mod-12 Counter TA Comments/Signature: Lab 6 - 2A - 68