

Flip-flop Excitation Tables

→ For the design of sequential circuits, we should know the excitation tables of flip-flops.

→ The excitation table of a flip-flop can be obtained from its truth table (Characteristic table).

→ It indicates the inputs required to be applied to the flip-flop to take it from the present state to the next state.

<u>SR Flip-flop</u>			
<u>PS</u>	<u>NS</u>	<u>Required Inputs</u>	
<u>Q(t)</u>	<u>Q(t+1)</u>	<u>S</u>	<u>R</u>
0	0	0	X
0	1	1	0
1	0	0	1
1	1	X	0

<u>JK Flip-flop</u>			
<u>PS</u>	<u>NS</u>	<u>Required Inputs</u>	
<u>Q(t)</u>	<u>Q(t+1)</u>	<u>J</u>	<u>K</u>
0	0	0	X
0	1	1	X
1	0	X	1
1	1	X	0

<u>D Flip-flop</u>		
<u>PS</u>	<u>NS</u>	<u>Required Input</u>
<u>Q(t)</u>	<u>Q(t+1)</u>	<u>D</u>
0	0	0
0	1	1
1	0	0
1	1	1

<u>T Flip-flop</u>		
<u>PS</u>	<u>NS</u>	<u>Required Input</u>
<u>Q(t)</u>	<u>Q(t+1)</u>	<u>T</u>
0	0	0
0	1	1
1	0	1
1	1	0