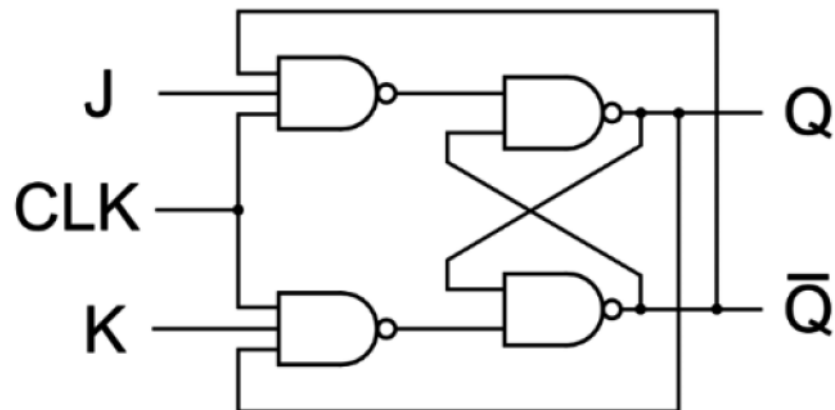
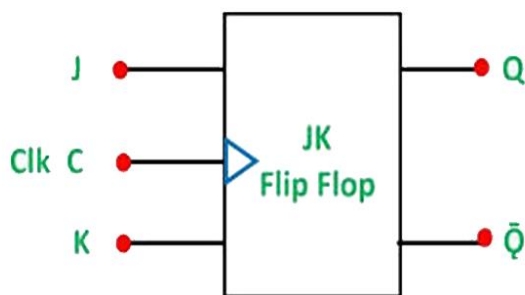


Q1)

Circuit Diagram & Truth Table

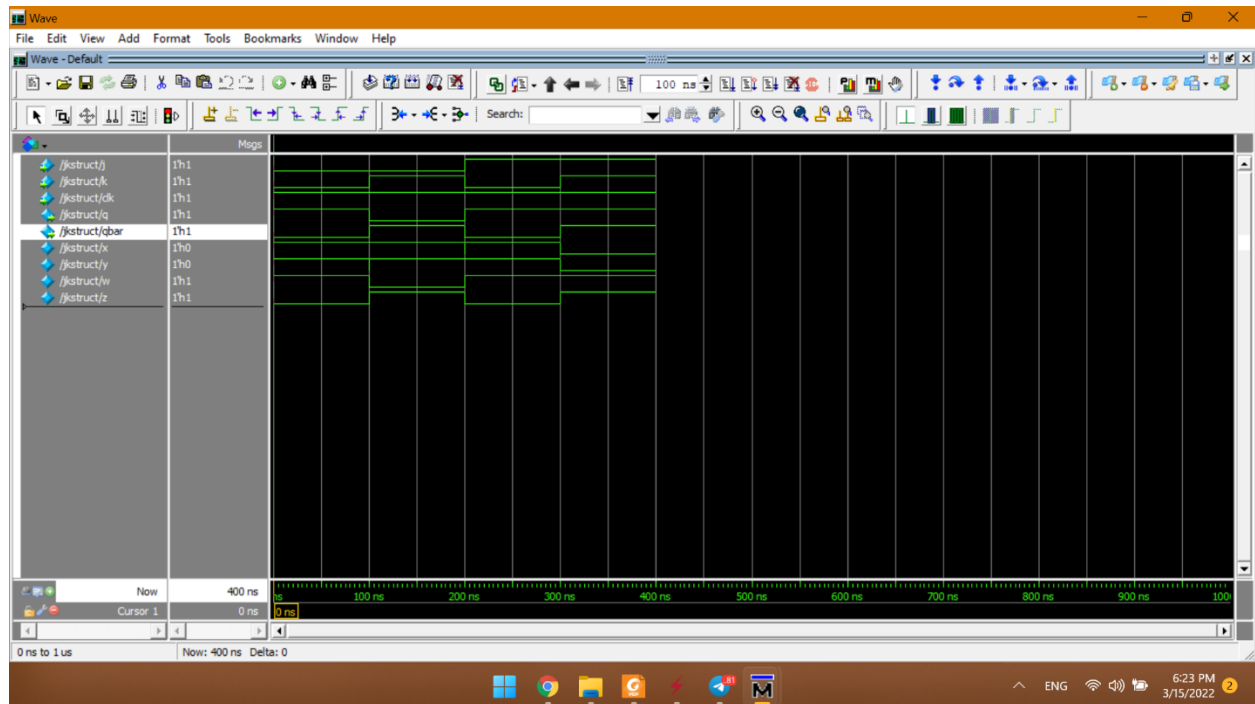


JK Flip Flop Circuit 74LS73



Clk	J	K	Q	Q'	State
1	0	0	Q	Q'	No change in state
1	0	1	0	1	Resets Q to 0
1	1	0	1	0	Sets Q to 1
1	1	1	-	-	Toggles

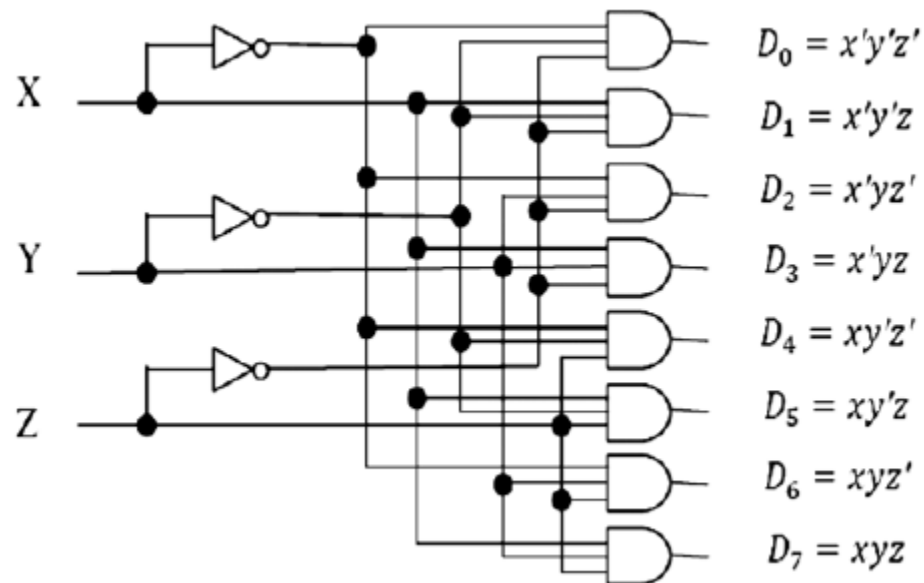
Waveform:



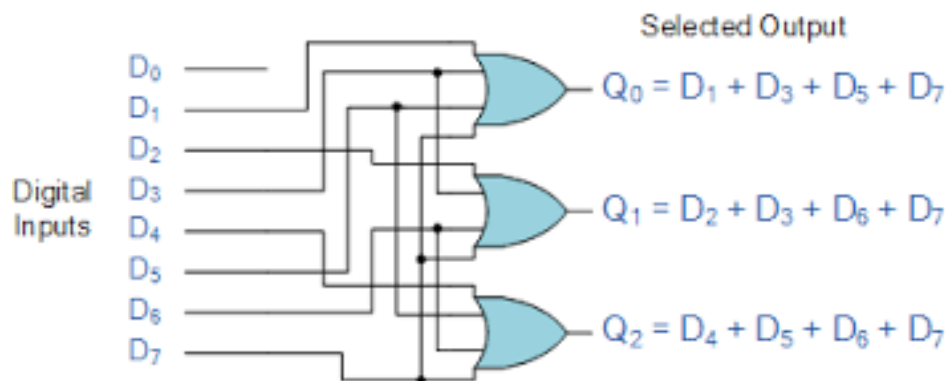
در حالت $j=0, k=0$ خروجی برابر مقدار اولیه Force شده در Q و Q' می باشد.

Q2)

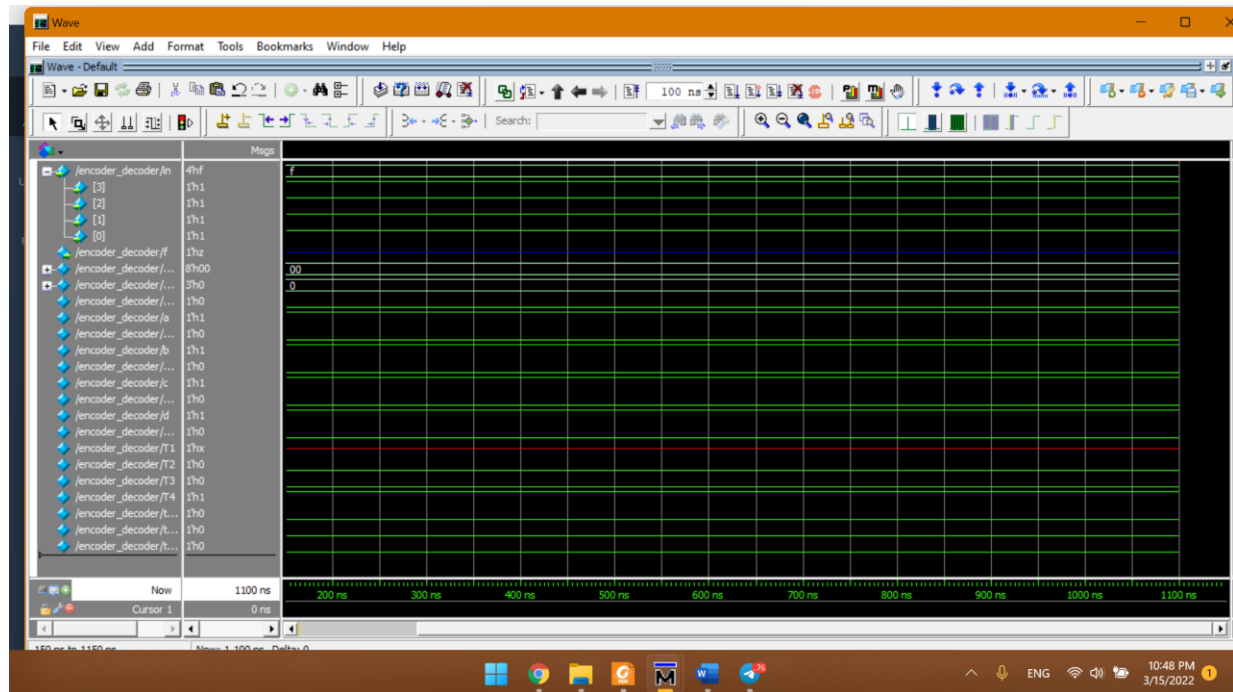
Decoder Circuit Diagram



Encoder Circuit Diagram

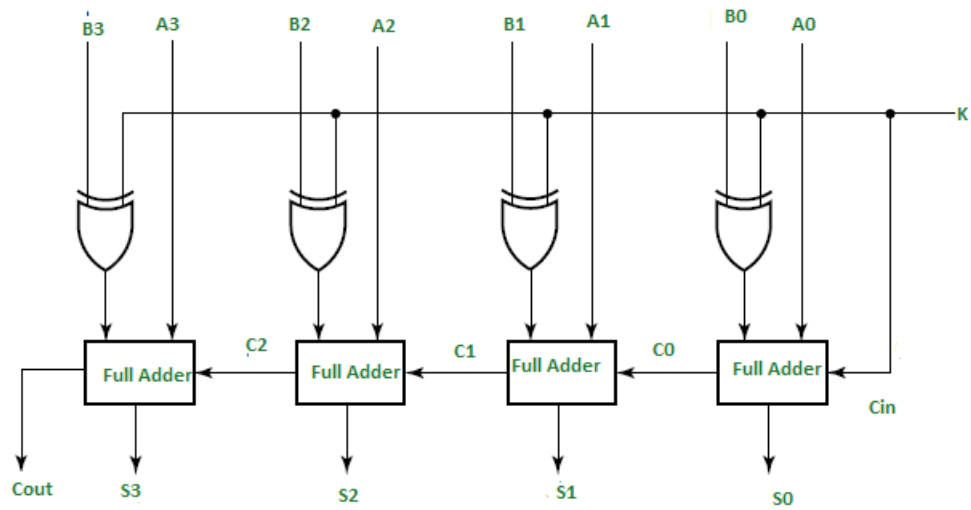


Waveform

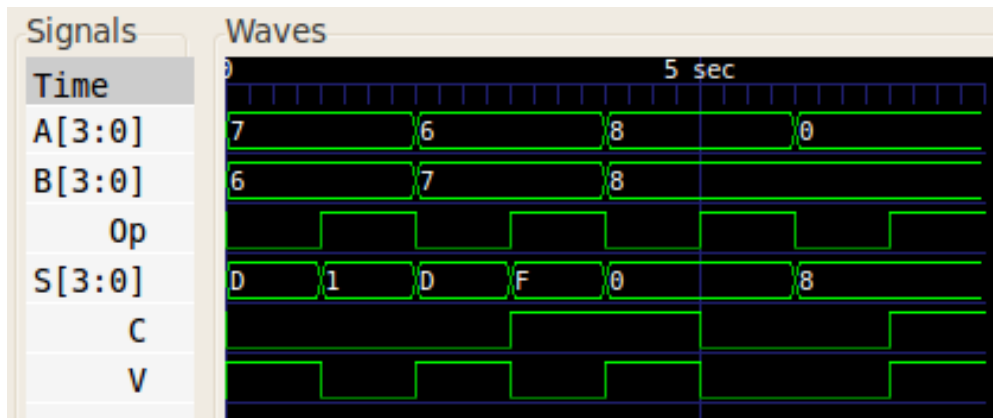


Q3)

Circuit Diagram



Waveform



References

Mano, M. Morris, and Kime, Charles R. *Logic and Computer Design Fundamentals. 2nd Edition.* Prentice Hall, 2000.