Sardar Vallabhbhai National Institute of Technology, Surat

ECED Department

Subject: Digital Electronics & Logic Design (EC-207)

B.Tech Computer, Sem-III, Div – (A&B)

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Tutorial – 4 Hints/Solutions

1

a

-2^7	2^6	2^5	2^4	2^3	2^2	2^1	2^0	
0	0	0	1	0	1	1	1	+23

b

-2^7	2^6	2^5	2^4	2^3	2^2	2^1	2^0	
1	1	1	0	1	0	0	0	-23

2

2

In this case, $8 - 3 = 8 + (-3) = 5$.

a

	00001000	Minuend (+8)
	+ 11111101	2's complement of subtrahend (−3)
Discard carry ⟶	**1 00000101**	Difference (+5)

In this case, $12 - (-9) = 12 + 9 = 21$.

b

00001100	Minuend (+12)
+ 00001001	2's complement of subtrahend (+9)
00010101	Difference (+21)

In this case, $-25 - (+19) = -25 + (-19) = -44$.

c

	11100111	Minuend (−25)
	+ 11101101	2's complement of subtrahend (−19)
Discard carry	**1 11010100**	Difference (−44)

In this case, $-120 - (-30) = -120 + 30 = -90$.

d

10001000	Minuend (−120)
+ 00011110	2's complement of subtrahend (+30)
10100110	Difference (−90)

4

3

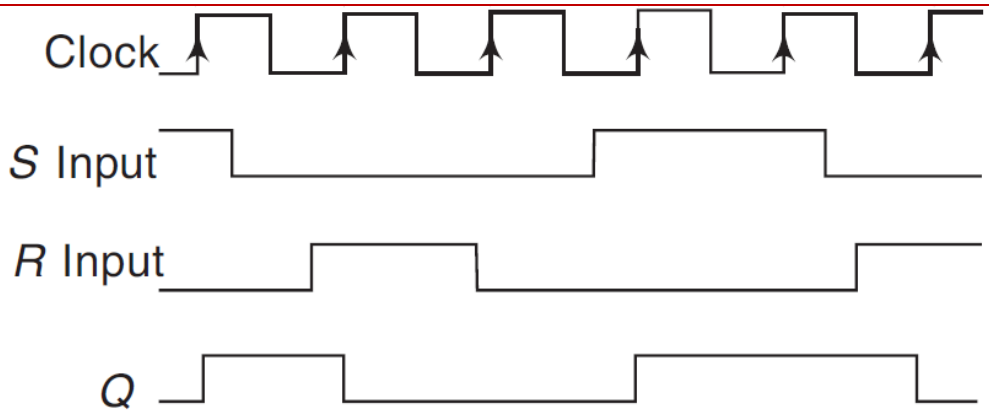
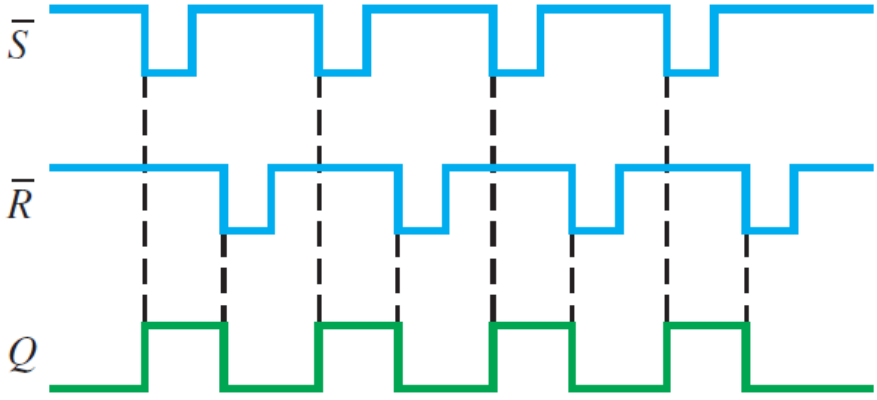
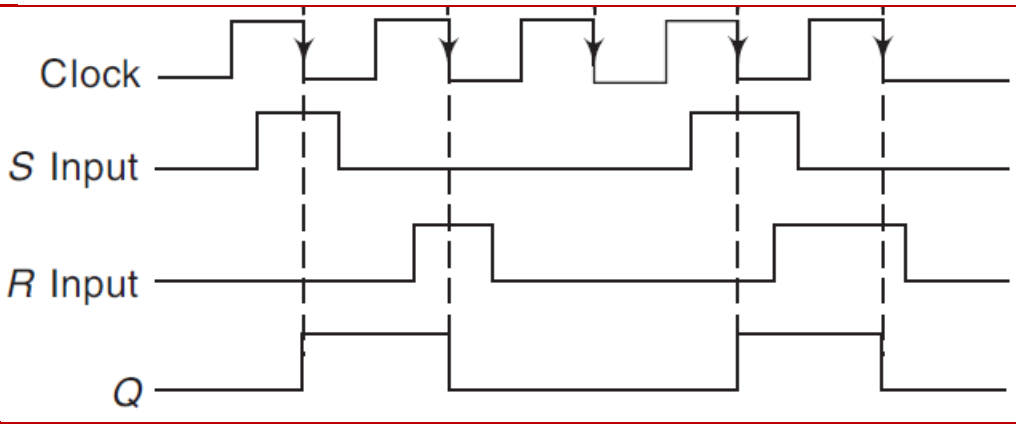
(a) 3 5 → **00110101**

(b) 9 8 → **10011000**

(c) 1 7 0 → **000101110000**

(d) 2 4 6 9 → **0010010001101001**

2

4	 Clock S Input R Input Q	2
5	 $\overline{S}$ $\overline{R}$ Q	3
6	 Clock S Input R Input Q	2