6-1

(a)

The result is actually 2^n+R1-R2.

If R1$\geq$R2, an overflow will happen and thus **C=1**, which means R1=R1-R2.

If R1$<$R2, there is no overflow and thus **C=0**, which means R1= the 2's complement of R2-R1.

(b)

The principle is the same as the one in **(a)**.

So if **C=1**, there is no borrow. If **(C=0)**, there is a borrow.

(c)

C=1 in two conditions:

- R1$\geq$R2 when R1 and R2 are both positive or both negative. In this condition, a carry will be generated by the subtraction.
- R1-R2 is positive when R1 is negative and R2 is positive. The result is obviously wrong and a carry is generated.

6-2

AND:

1000 0001

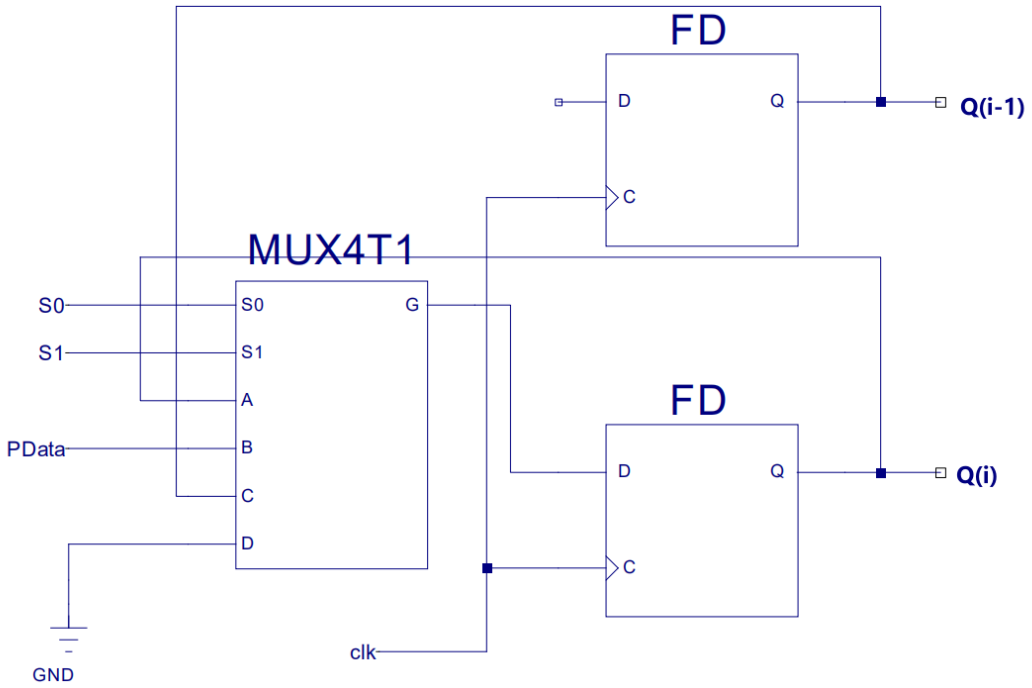
OR:

1101 1011

XOR:

0101 1010

6-5


FD
D
Q
Q(i-1)
C
MUX4T1
S0
S1
PData
S0
S1
A
B
C
D
G
FD
D
Q
Q(i)
C
clk
GND