LNMIIT
The LNM Institute of Information Technology

Electronics-I **Quiz 3** **Max Marks. 10**

Name: **Roll No:** **Section**

All questions are compulsory and use the space on this sheet with proper planning.

Q.1: Implement the complement of function F(A, B, C, D) = Σ (0,2,3,4,5,8,10,12) using minimum number of ~~2 input~~ NORgates. **[3]**

Q.2: Implement a full adder using two 4x1 multiplexers. **[3]**

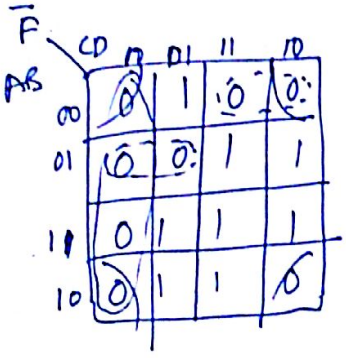
Q.3: A *PN* flip-flop has 2 inputs P and N and output Q. It performs four operations: reset the output to 0, no change in output, complement the output, and set the output to 1, when inputs *P* and *N* are 00, 01, 10, and 11, respectively. **[4]**

(a) Tabulate the characteristic table. (b) Derive the characteristic equation

==========

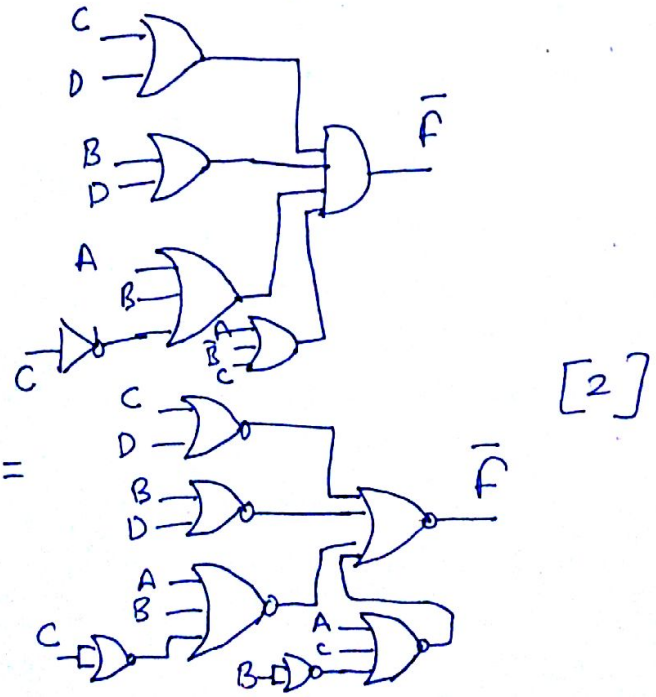
Ans 1 $F(A,B,C,D) = \Sigma(0,2,3,4,5,8,10,12)$

$\Rightarrow \bar{F} = \Pi(0,2,3,4,5,8,10,12)$



[1]

$\bar{F} = (C+D)(B+D)(A+B+\bar{C})(A+\bar{B}+C)$

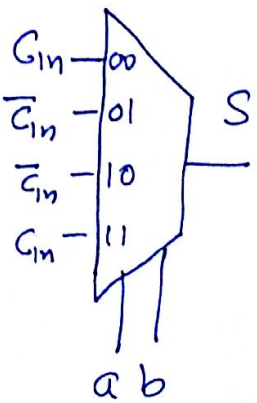


[2]

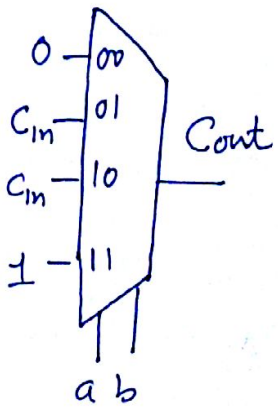
Ans - 2.

a	b	C_{in}	S	Cout
0	0	0	0	0
0	0	1	1	0
0	1	0	1	0
0	1	1	0	1
1	0	0	1	0
1	0	1	0	1
1	1	0	0	1
1	1	1	1	1

[1]



[1]

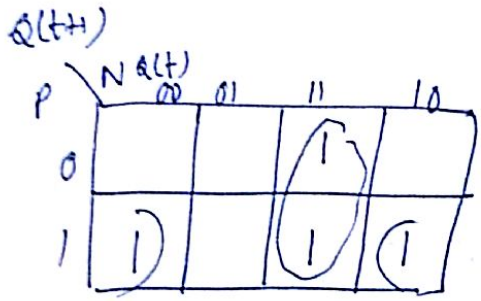


[1]

Ans-3

P	N	Q(t)	Q(t+1)
0	0	0	0
0	0	1	0
0	1	0	0
0	1	1	1
1	0	0	1
1	0	1	0
1	1	0	1
1	1	1	1

[2]



$$Q(t+1) = P\overline{Q(t)} + N\,Q(t)$$

[2]