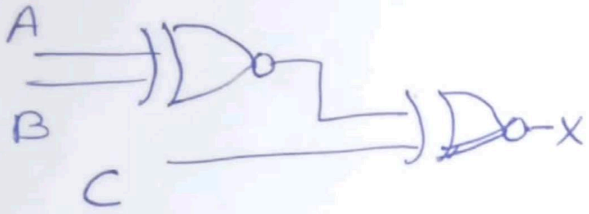
Basics of Digital Electronics (CE145)
Tutorial - 2 (CE1 & CE2)

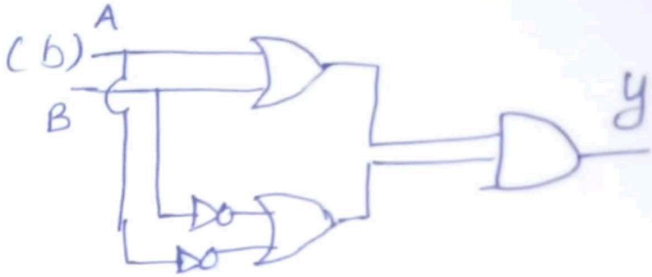
Q1 Draw NOT, AND, OR gate using (a) only NAND & (b) only NOR gates.

Q2 write the truth table for the output f^n of following logic circuits

(a)



(b)



Q3 From the following Boolean function draw the logic diagram

① $Y = AB + \overline{(A+B)}$

② $X = A + B + \overline{CD}$

③ $Y = \overline{(AB)(\overline{A+B}) + \overline{EF}}$

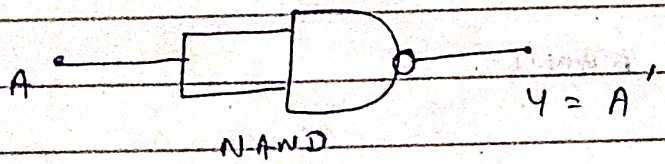
④ $Z = \bar{A}B + C\bar{D} + ABC$

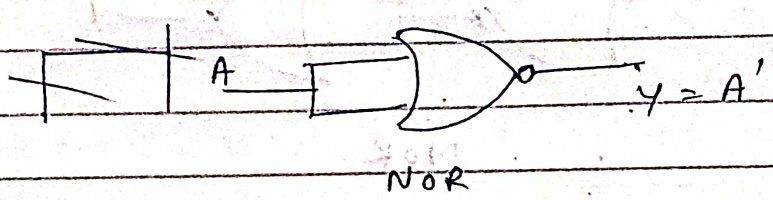
⑤ $A = Y_1 \oplus Y_2 (Y_3 \odot Y_4) + (Y_5 \oplus Y_6 \oplus Y_7)$

Tutorial-2

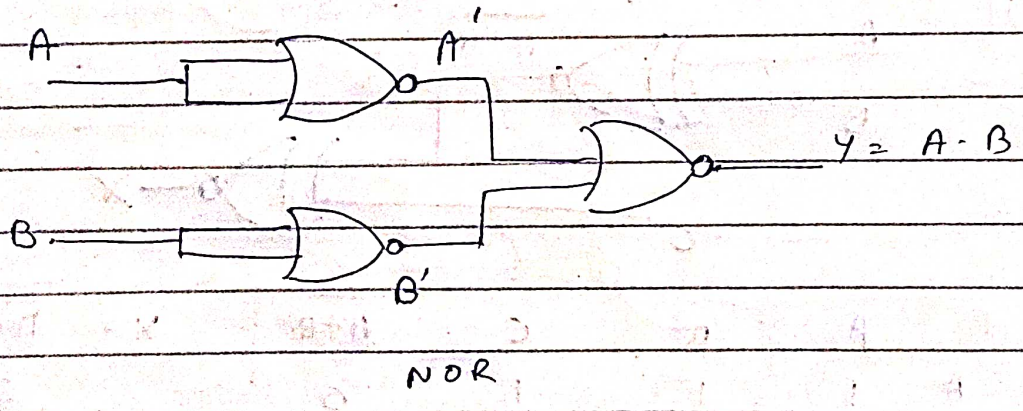
(1) Draw NOT, AND, OR using
a) NAND gates.
b) NOR

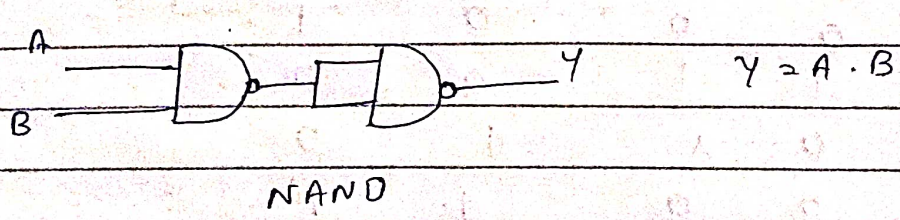
NOT Gate :-



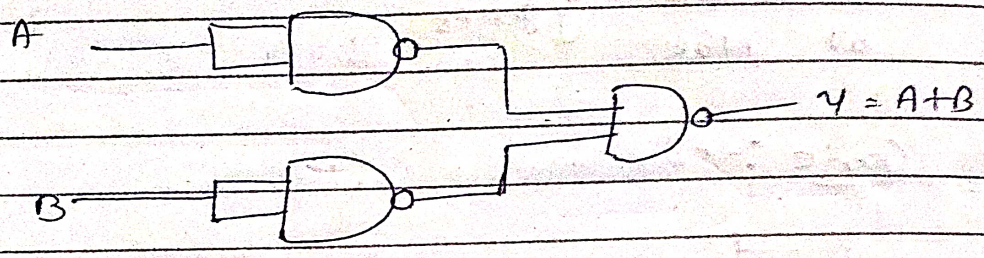


AND Gate :-

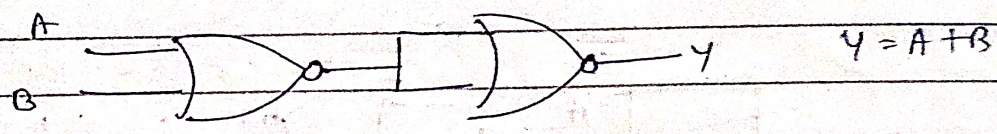




OR Gate :-

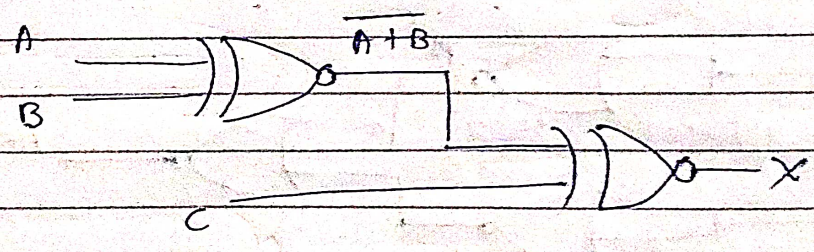


AND



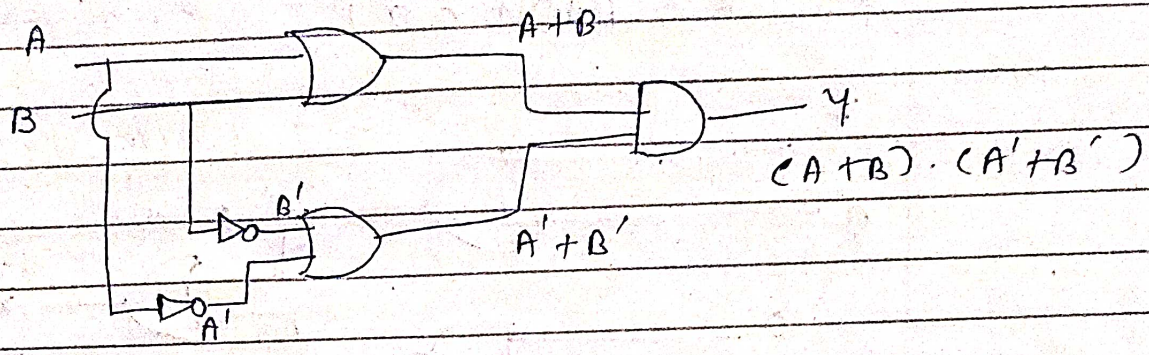
NOR

(2) a)



A	B	C	$\overline{A+B}$	$X = \overline{\overline{A+B}+C}$
1	1	1	0	0
0	0	0	1	0
1	1	0	0	1
0	1	1	0	0
0	0	1	1	0
1	0	1	0	0
0	1	0	0	1
1	0	0	0	1

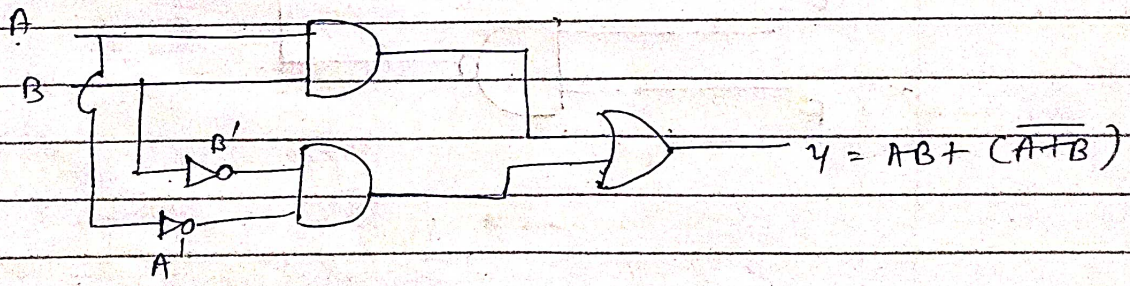
b)



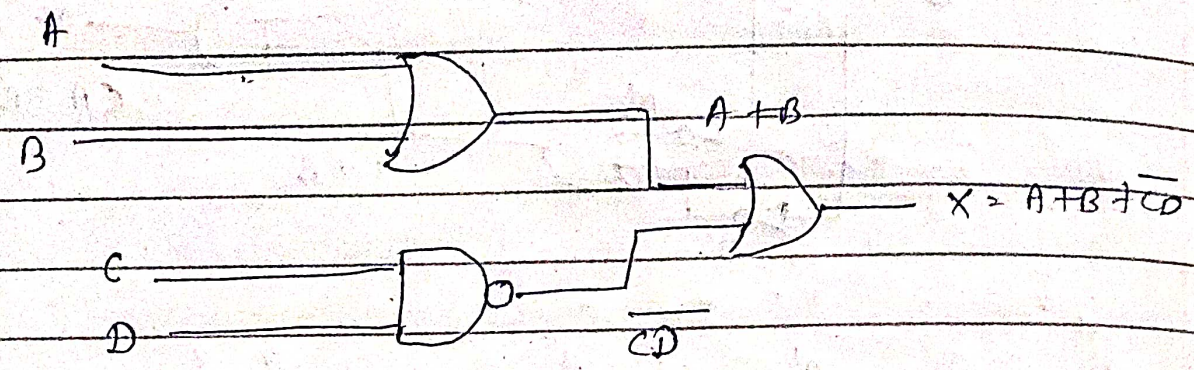
A	B	A'	B'	A+B	A'+B'	y
1	1	0	0	1	0	0
0	0	1	1	0	1	0
1	0	0	1	1	1	1
0	1	1	0	1	1	1

③ a) $Y = AB + (\overline{A+B})$

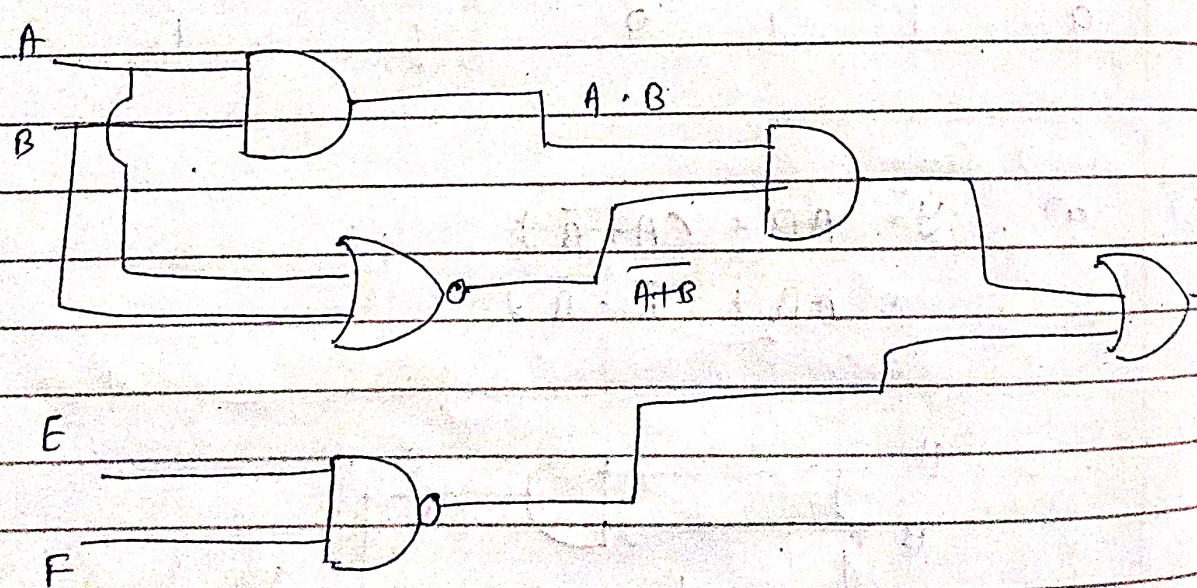
$= AB + (\bar{A} \cdot \bar{B})$



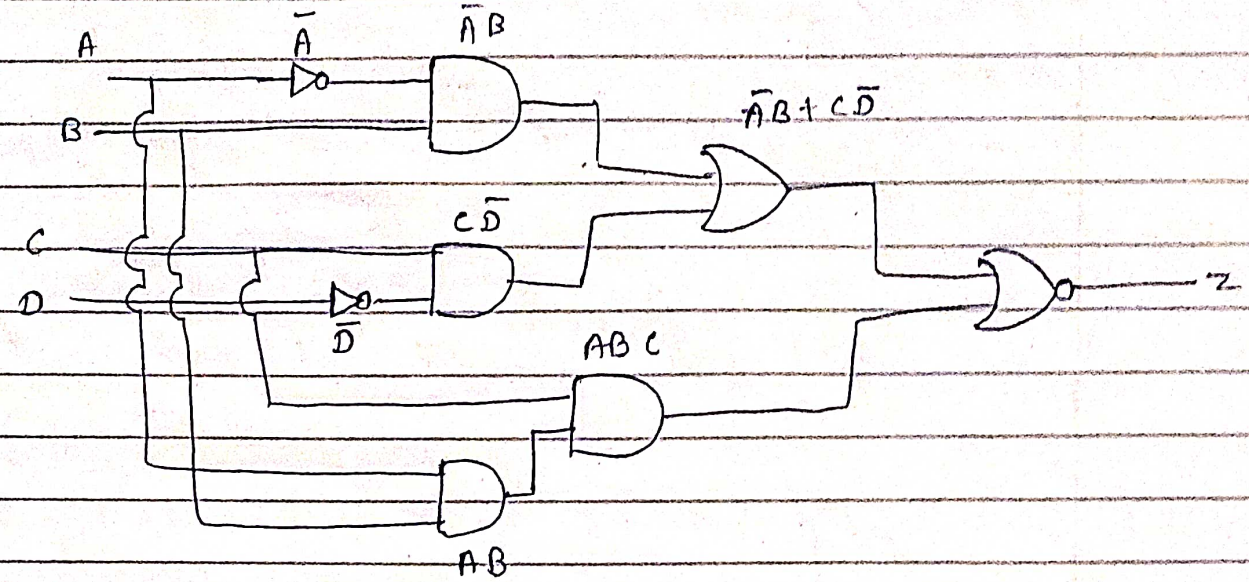
2) $X = (A+B)+(\overline{C\,D})$



3) $Y = (A \cdot B) \cdot (\overline{A+B}) + \overline{EF}$



4) $Z = \overline{\bar{A}B + C\bar{D} + ABC}$



5) $A = y_1 \oplus y_2 (y_3 \odot y_4) + (y_5 \oplus y_6 \oplus y_7)$