Date
30/09/21

Q.1> Draw the logic diagram and truth table of the expression —

(a) $X = A + B + \overline{CD}$.

Sol^{n}:- Truth table :-

A	B	C	D	CD	$\overline{CD}$	$A+B+\overline{CD}$
0	0	0	0	0	1	1
0	0	0	1	0	1	1
0	0	1	0	0	1	1
0	0	1	1	1	0	0
0	1	0	0	0	1	1
0	1	0	1	0	1	1
0	1	1	0	0	1	1
0	1	1	1	1	0	1
1	0	0	0	0	1	1
1	0	0	1	0	1	1
1	0	1	0	0	1	1
1	0	1	1	1	0	1
1	1	0	0	0	1	1
1	1	0	1	0	1	1
1	1	1	0	0	1	1
1	1	1	1	1	0	1

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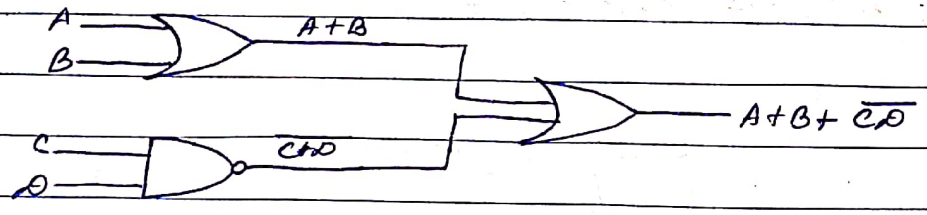
Logic diagram :-

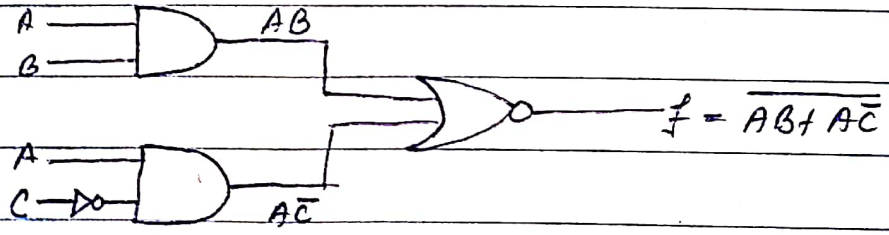


(b) $f = \overline{AB + A\bar{C}}$

Soln :- Truth table :-

A	B	C	$\bar{C}$	$A\bar{C}$	AB	$AB+A\bar{C}$	$f=\overline{AB+A\bar{C}}$
0	0	0	1	0	0	0	1
0	0	1	0	0	0	0	1
0	1	0	1	0	0	0	1
0	1	1	0	0	0	0	1
1	0	0	1	1	0	1	0
1	0	1	0	0	0	0	1
1	1	0	1	1	1	1	0
1	1	1	0	0	1	1	0

Logic Diagram :-



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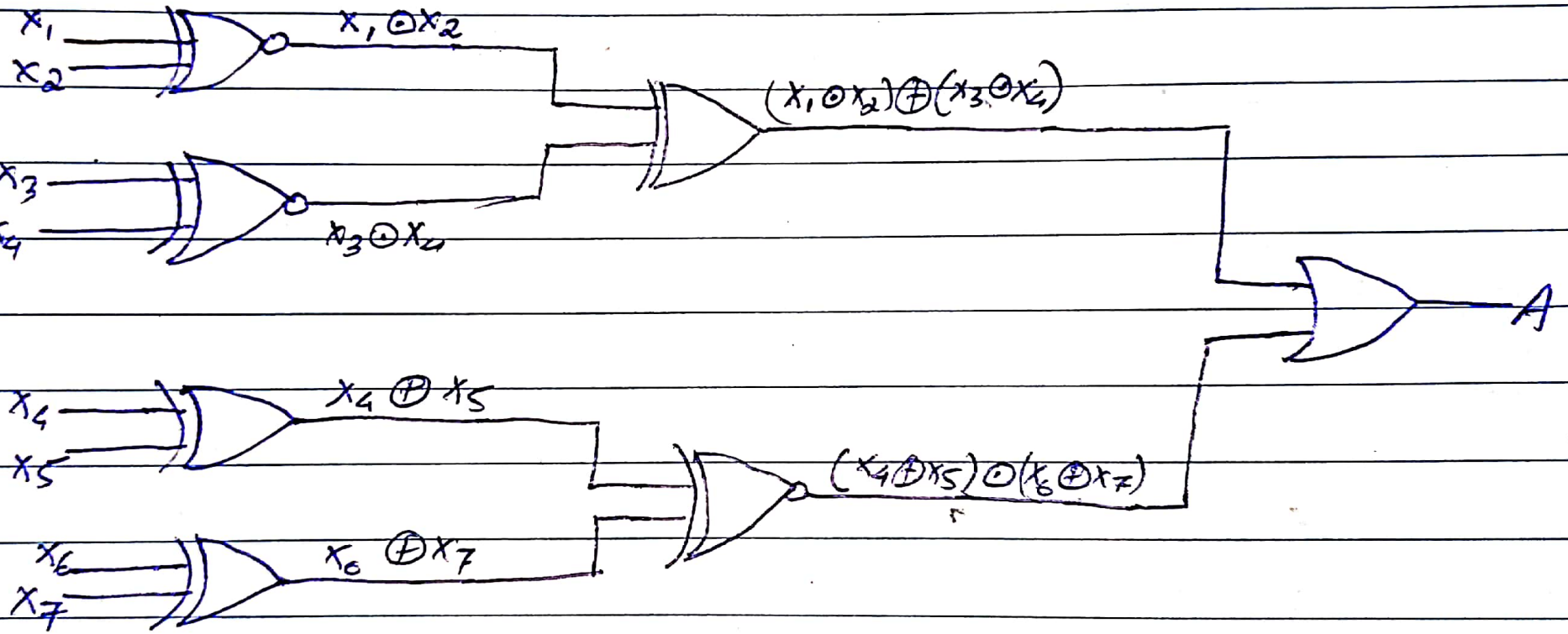
Q.2) Draw a logic diagram that implements

$$A = (x_1 \odot x_2) \oplus (x_3 \odot x_4) + (x_4 \oplus x_5) \odot (x_6 \oplus x_7)$$

Sol^n :-



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