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Course : DLD

Assignment No: 5

QUESTION # 1

(i) $X = \bar{A}[B + C(D + \bar{E})]$ Solve By Nand and NOR

Soln:

$$\bar{\bar{X}} = X$$

$$\therefore X = \bar{A}[B + C(D + \bar{E})]$$ Simplify expression

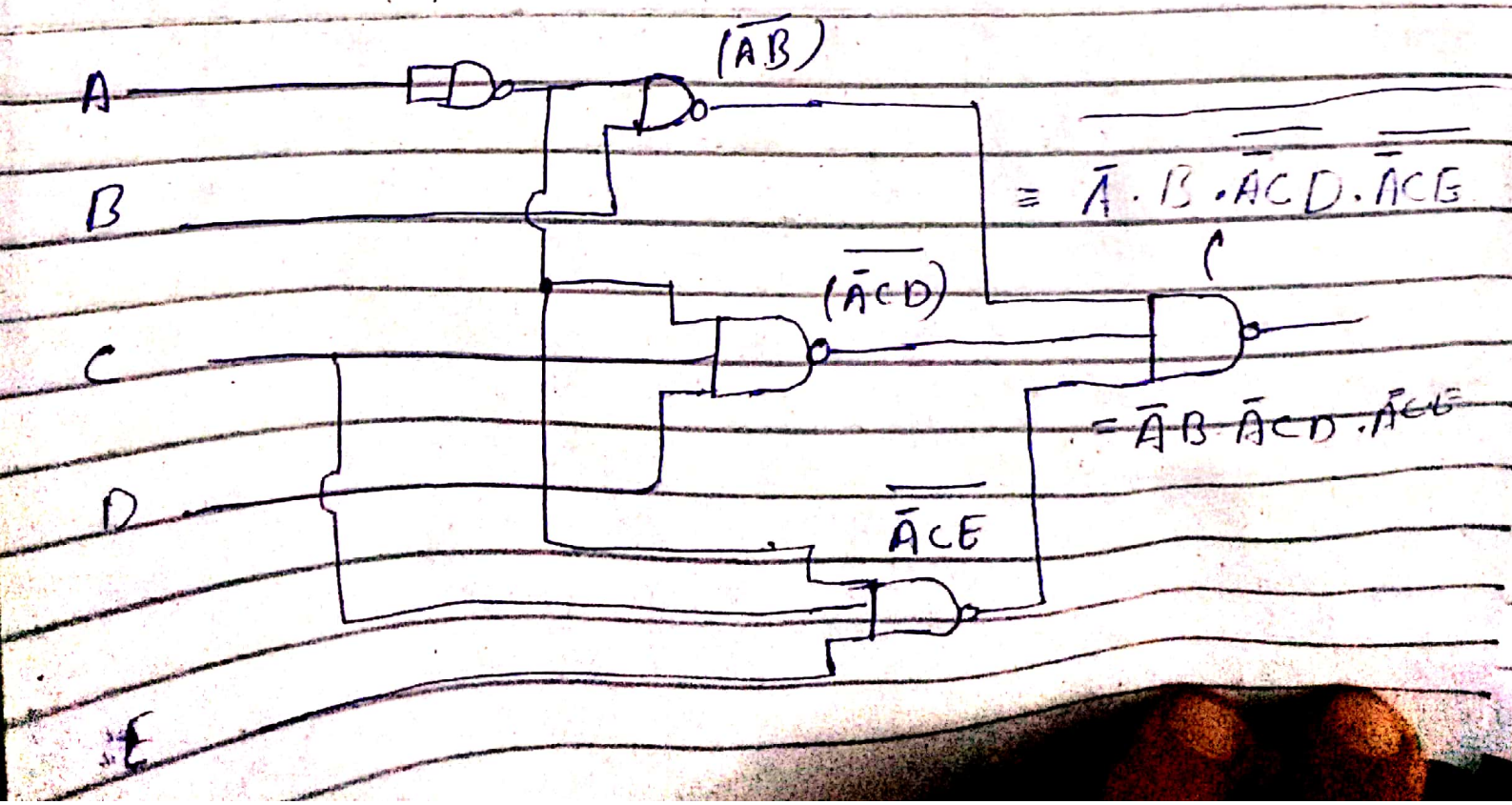
$$X = AB + \bar{A}CD + \bar{A}C\bar{E} \rightarrow (1)$$

$$X = \overline{(\overline{AB})(\overline{\bar{A}CD})(\overline{\bar{A}C\bar{E}})} \rightarrow (2)$$

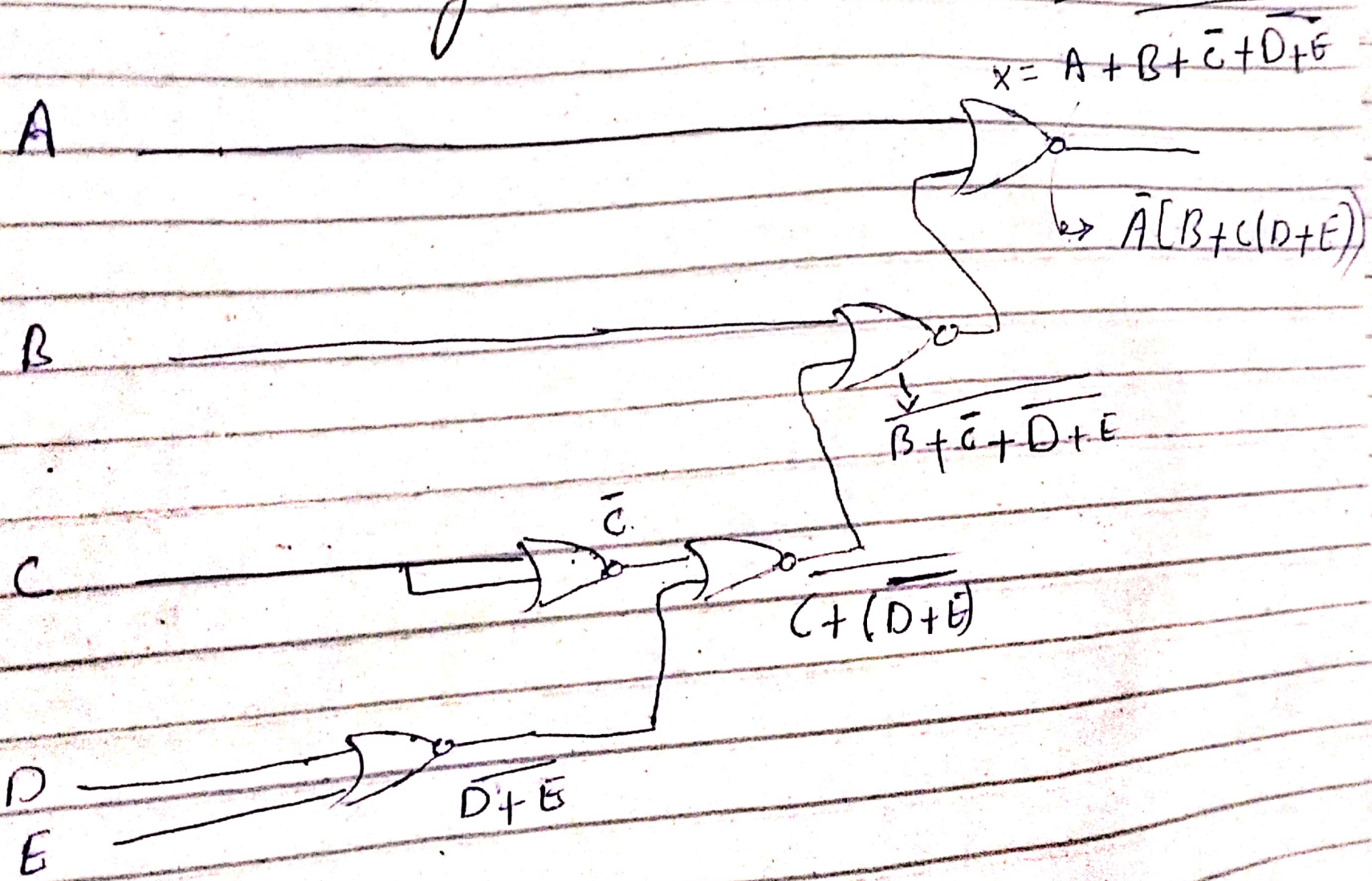
$$X = \overline{(A+\bar{B})(A+\bar{C}+\bar{D})(A+\bar{C}+\bar{E})}$$

$$X = \overline{(A+\bar{B})} + \overline{(A+\bar{C}+\bar{D})} + \overline{(A+\bar{C}+\bar{E})} \rightarrow (3)$$

implementing By using Nand using eq (2)



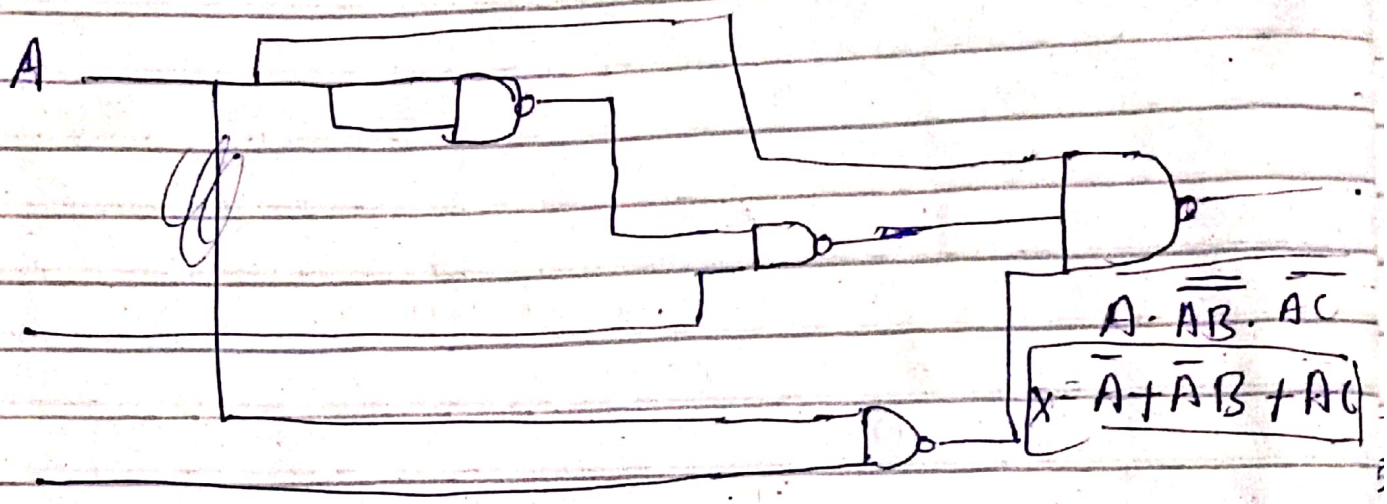
By using NOR:



Question #2

(a)

Nand :-



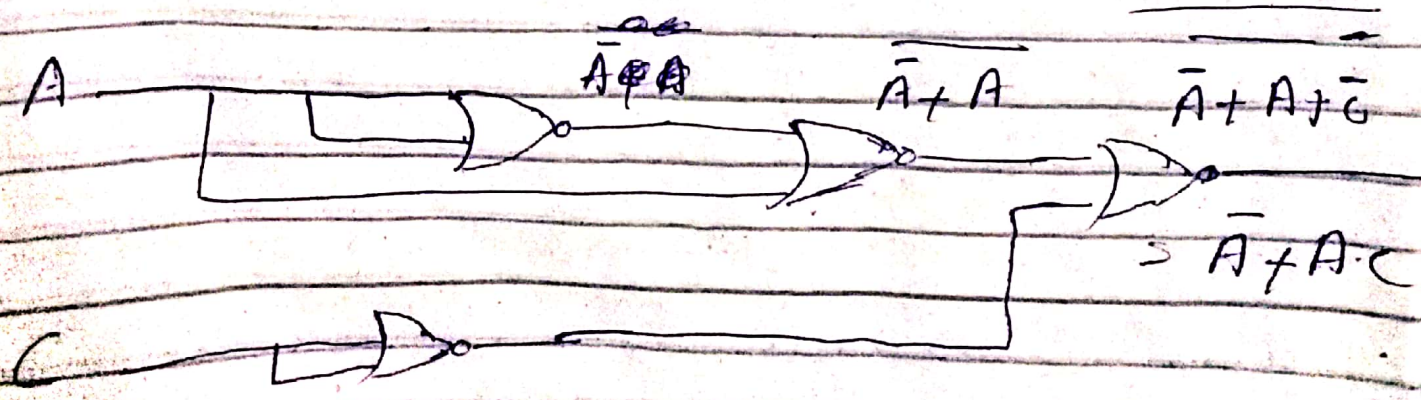
NOR :

Simplifying equation

$= \bar{A} + \bar{A}B + AC$

$= \bar{A}(1 + B) + AC$

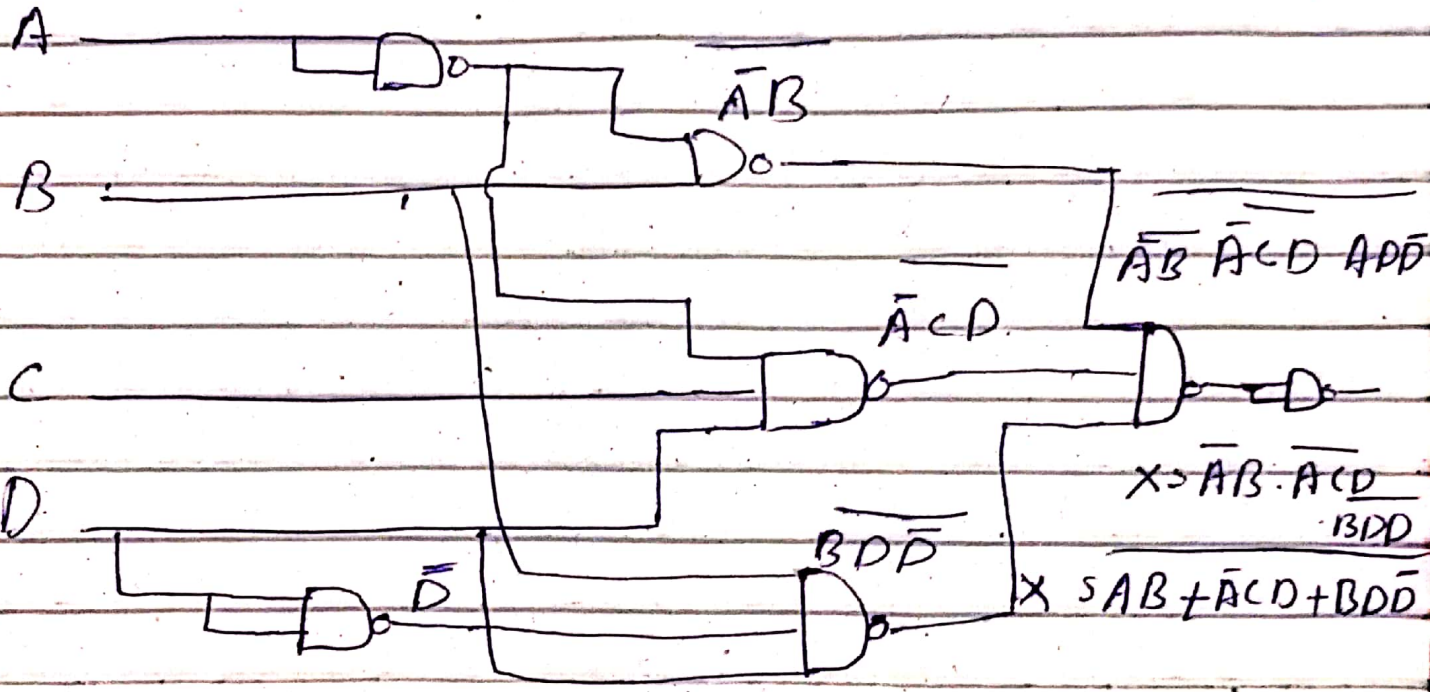
$\bar{A} + AC$



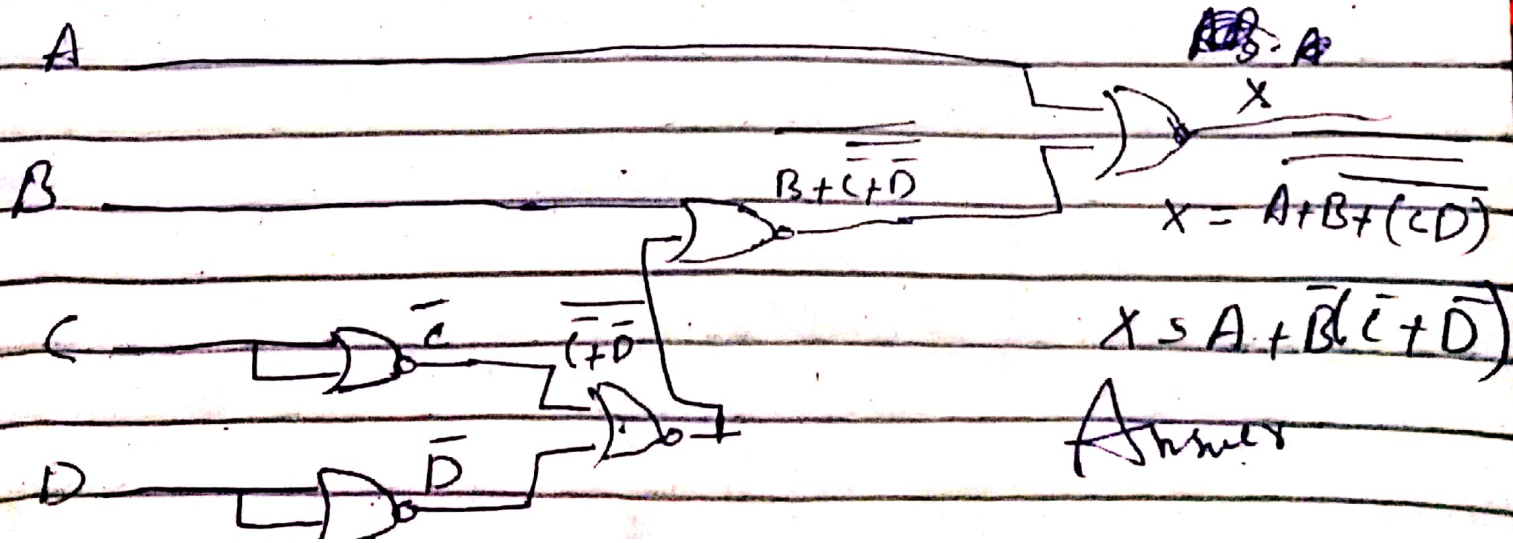
Question # 2

(b)

Nand :



By using NOR



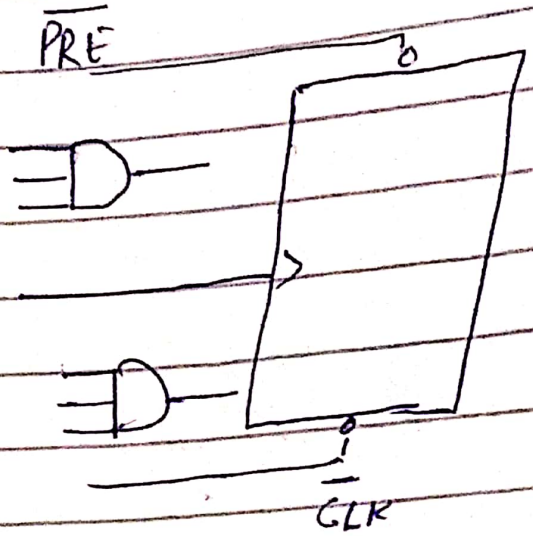
Question # 3

Q3# How J-K FlipFlop have Solved invalid Condition?

Answer:- J-K FlipFlop is with addition of Clock input circuitry when Both J and K are "1" the invalid Condition takes place. Thus to prevent invalid Condition Clock is introduced.

Question # 9

Problem # 16



$\bar{J}_1 = 1010011$, $\bar{J}_2 = 0111010$, $\bar{J}_3 = 1111000$

$K_1 = 0001110$, $K_2 = 1101100$, $K_3 = 1010101$

Resultant of $\bar{J}$ from And Gate

$\bar{J}_1 = 1\ 0\ 1\ 0\ 0\ 1\ 1$: use And Gate

$\bar{J}_2 = 0\ 1\ 1\ 1\ 0\ 1\ 0$

$\bar{J}_3 = 1\ 1\ 1\ 1\ 0\ 0\ 0$

$\bar{J} = 0\ 0\ 1\ 0\ 0\ 0\ 0$

Resultant of K_1, K_2, K_3 From And gate

$K_1 = 0\ 0\ 0\ 1\ 1\ 1\ 0$

$K_2 = 1\ 1\ 0\ 1\ 1\ 0\ 0$

$K_3 = 1\ 0\ 1\ 0\ 1\ 0\ 1$

$K = 0\ 0\ 0\ 0\ 1\ 0\ 0$

Applying truth table for Positive triggered edge

J	0 0 1 0 0 0 0
K	0 0 0 0 1 0 0
Q	0 0 0 1 0 0 0

Q = 0 0 1 1 0 0 0 Answer

Problem #17