Homework 7 - ECE 1238

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(1) (a)

A	B	S	C
0	0	0	0
0	1	1	0
1	0	1	0
1	1	0	1

(b) $S = \bar{A}B + A\bar{B} = A \oplus B$

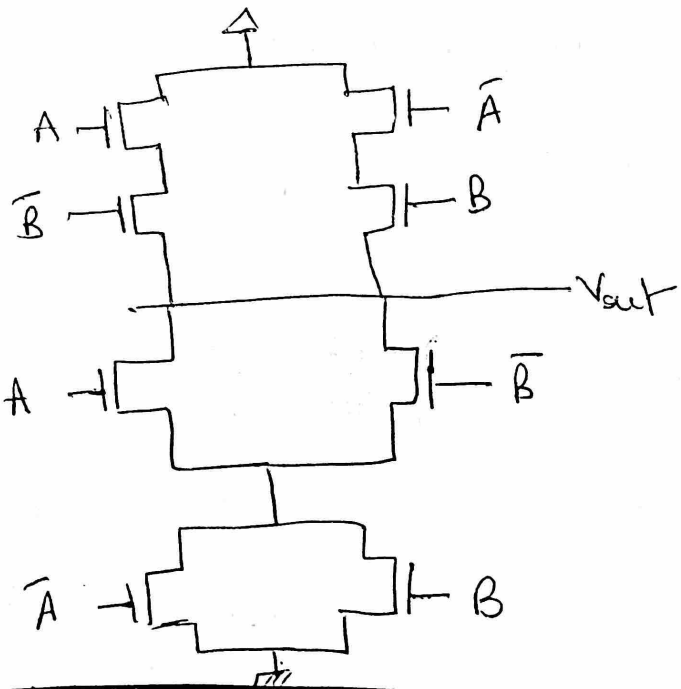
$C = AB$

(c) $S = \bar{A}B + A\bar{B} = \overline{\overline{\bar{A}B + A\bar{B}}}$

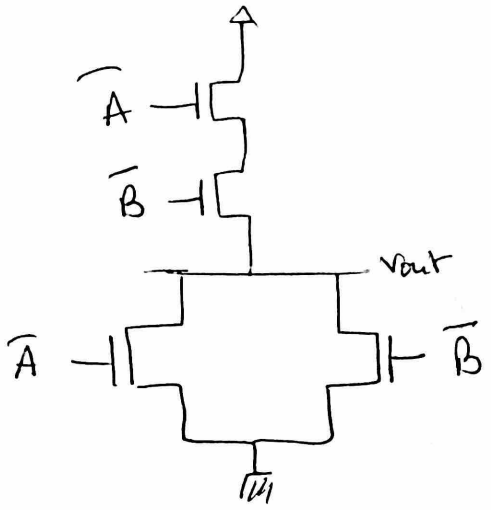
$= \overline{(A+\bar{B})(\bar{A}+B)}$

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

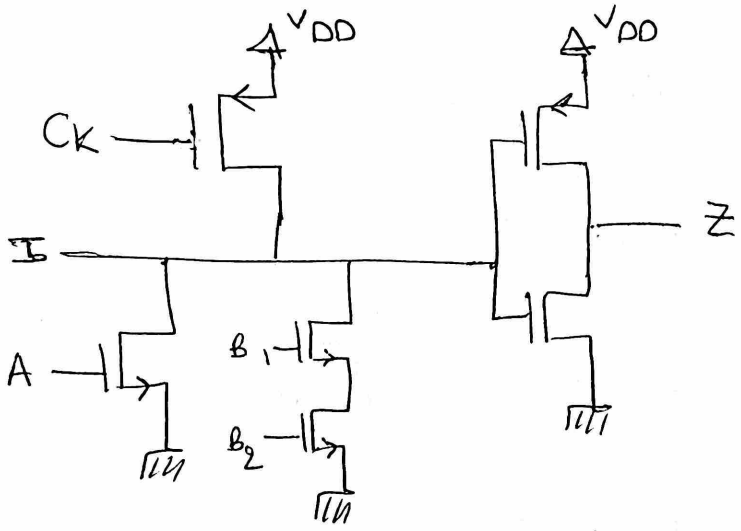
(d) 1) $S = \overline{(A+\bar{B})(\bar{A}+B)}$



2) $C = \overline{\bar{A} + \bar{B}}$



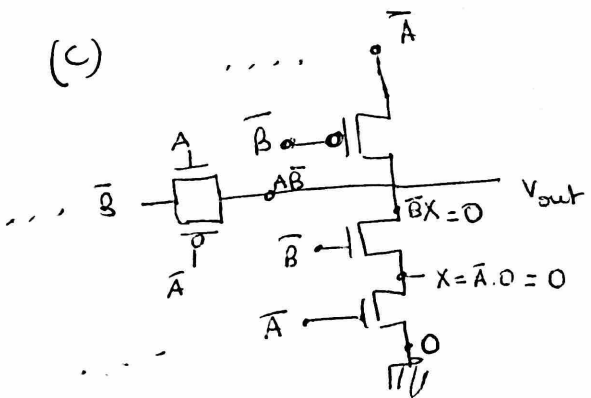
(2)

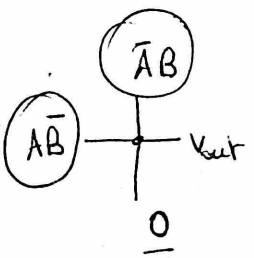


(3) (a) $F = \overline{D + A(B+C)}$

(b) $V_{out} = \overline{(Q+R)(S+T)}$

(c)



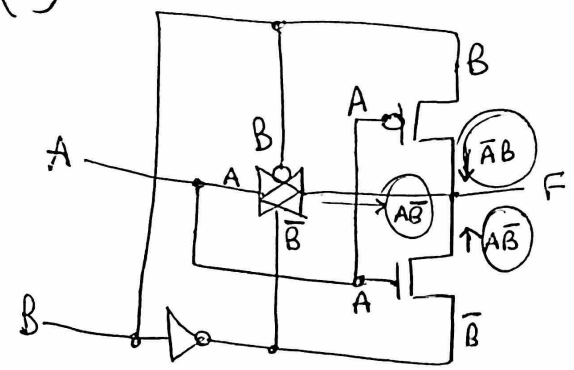


$V_{out} = \bar{A}B + A\bar{B}$

$= A \oplus B$

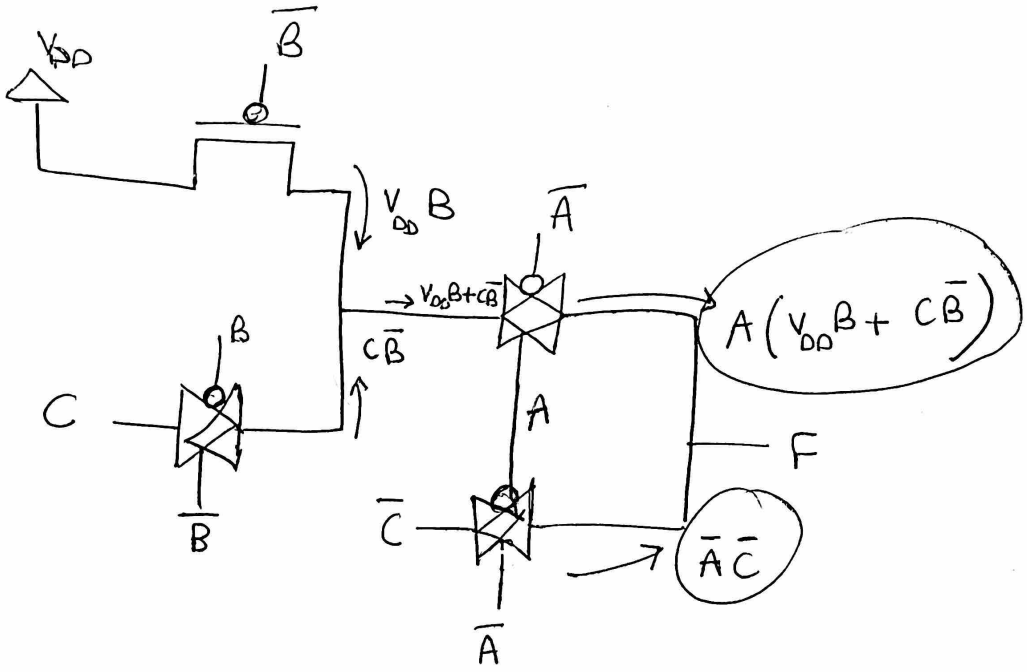
(1) here, I considered GND to be input '0'

(d)



$$F = A\bar{B} + A\bar{B} + \bar{A}B$$
$$= A\bar{B} + \bar{A}B$$
$$= A \oplus B$$

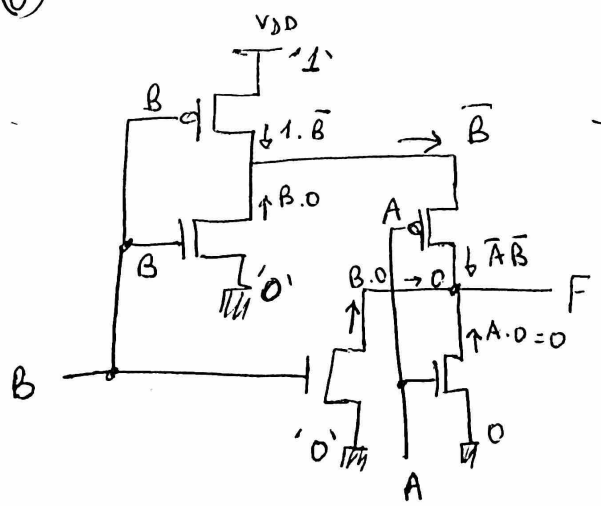
(e)



So $$F = \bar{A}\bar{C} + A(V_{DD}B + C\bar{B})$$

if we take $V_{DD} = '1' \Rightarrow F = \bar{A}\bar{C} + A(B + C\bar{B})$

(b)



$$F = \bar{A}.\bar{B}$$

also here, GRND = '0'

V_{DD} = '1'