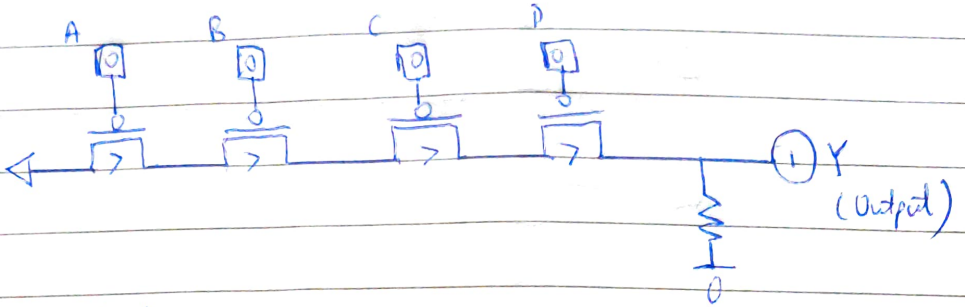


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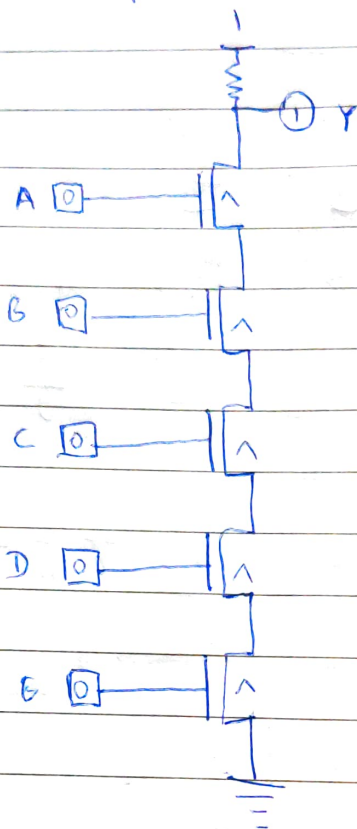
1) Series PMOS :



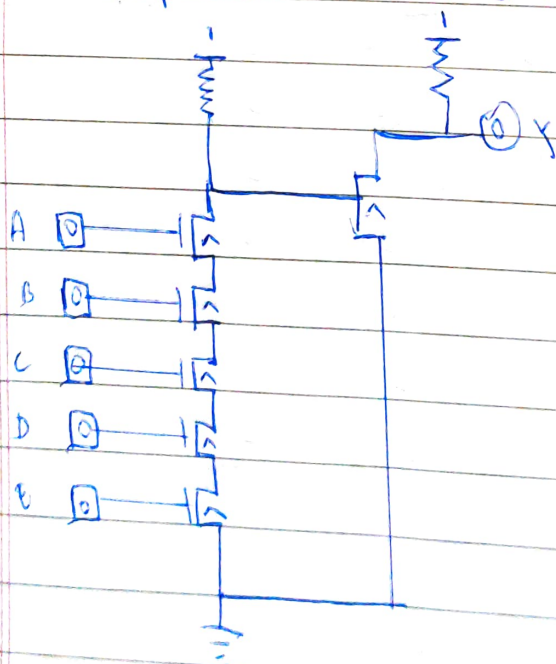
Truth table :

A	B	C	D	$Y = \overline{A \cdot B \cdot C \cdot D} = (A+B+C+D)$
0	0	0	0	1
0	0	0	1	0
0	0	1	0	0
0	0	1	1	0
0	1	0	0	0
0	1	0	1	0
0	1	1	0	0
0	1	1	1	0
1	0	0	0	0
1	0	0	1	0
1	0	1	0	0
1	0	1	1	0
1	1	0	0	0
1	1	0	1	0
1	1	1	0	0
1	1	1	1	0

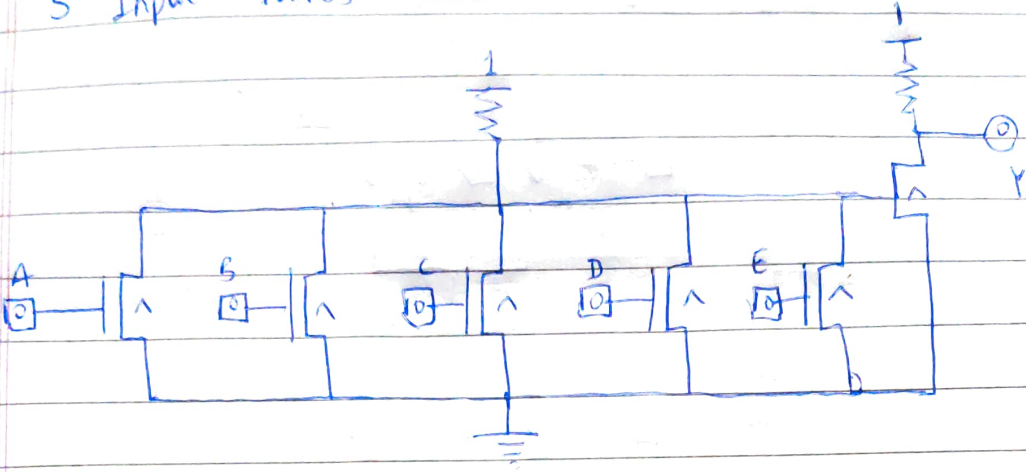
2) i) 5 - Input NMOS NAND :



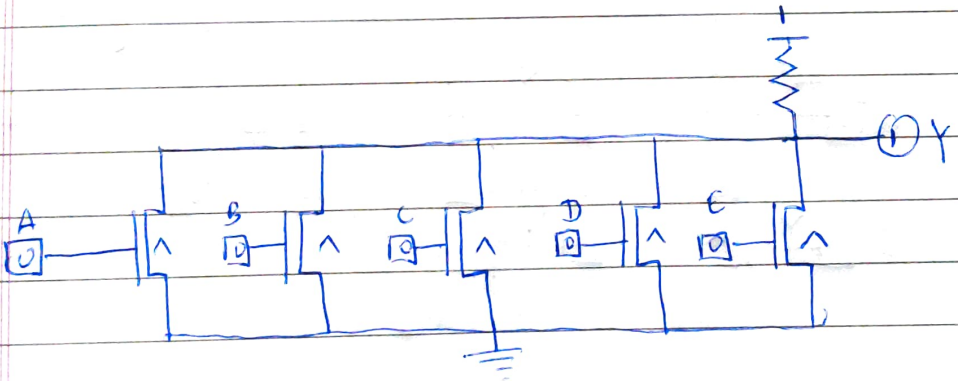
ii) 5 - Input NMOS AND :



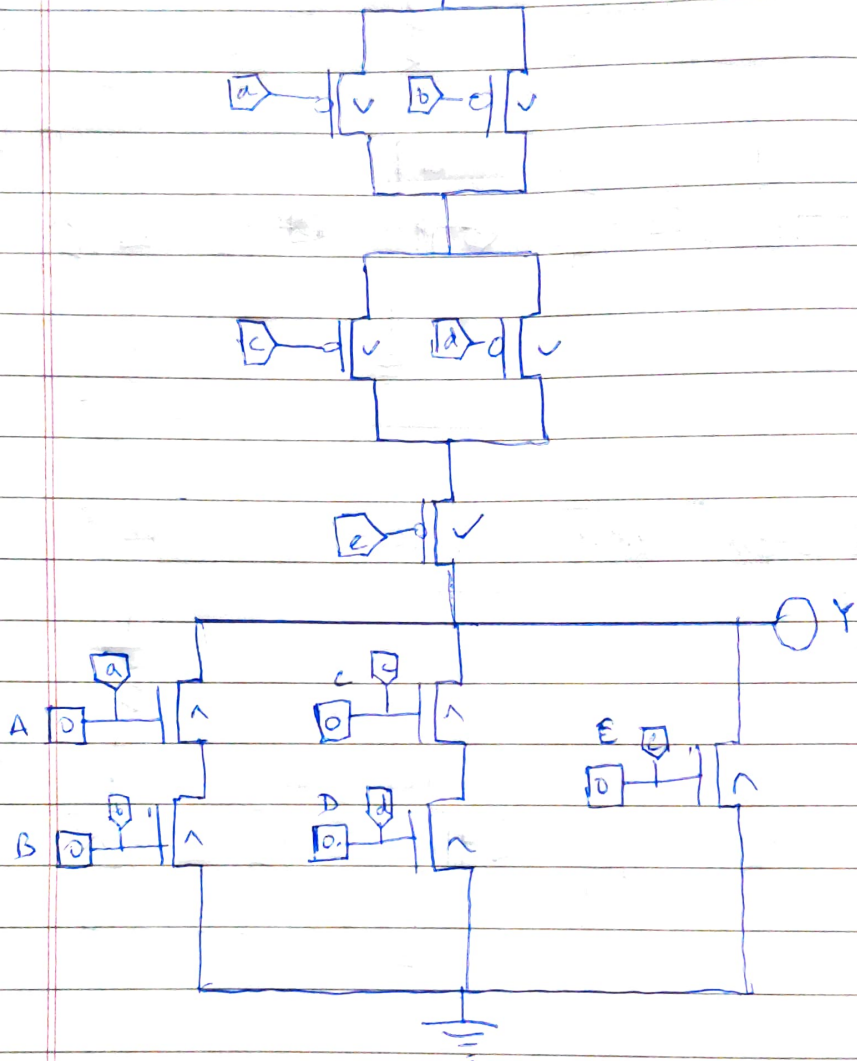
iii) 5 Input NMOS OR:



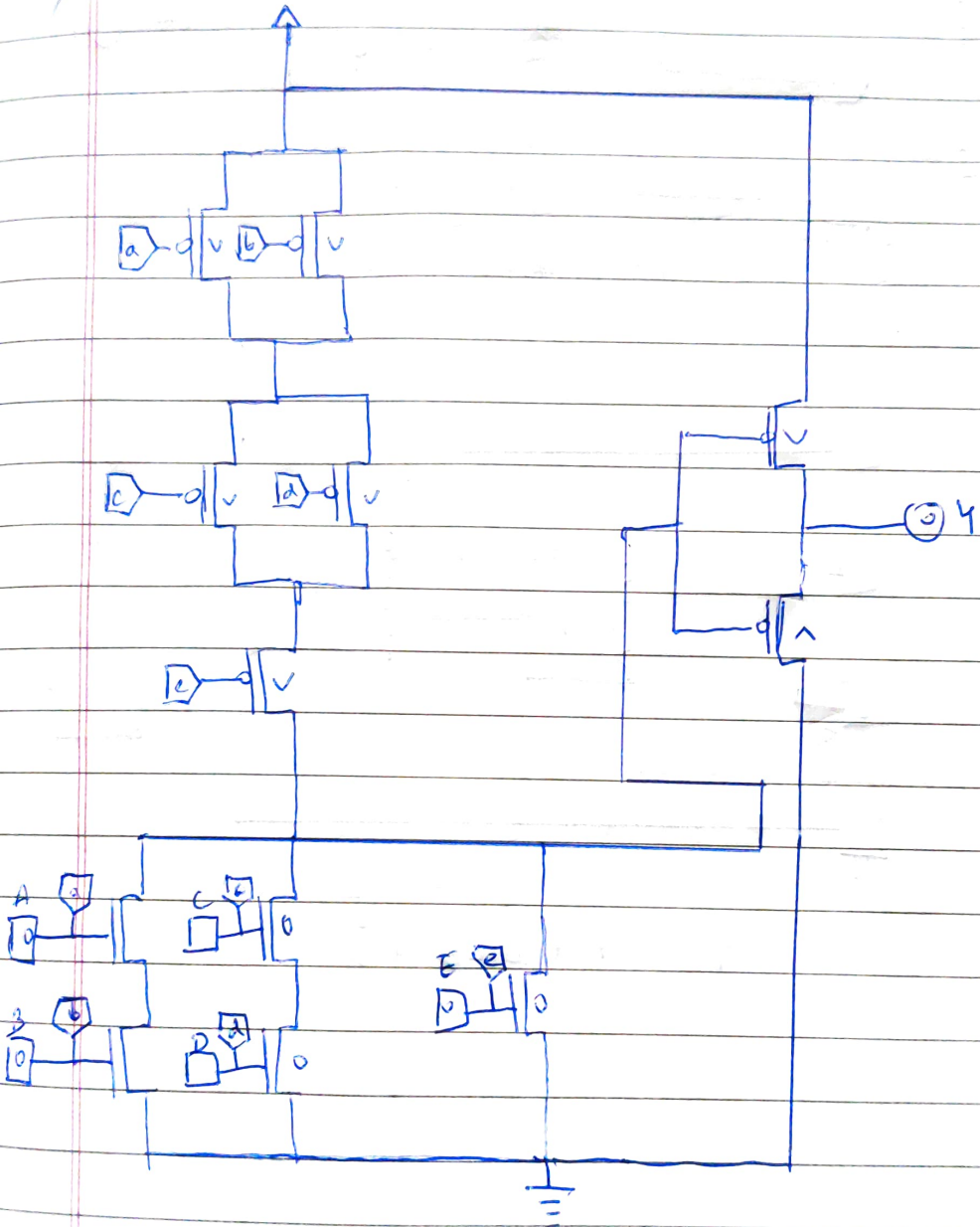
iv) 5 Input NMOS NOR



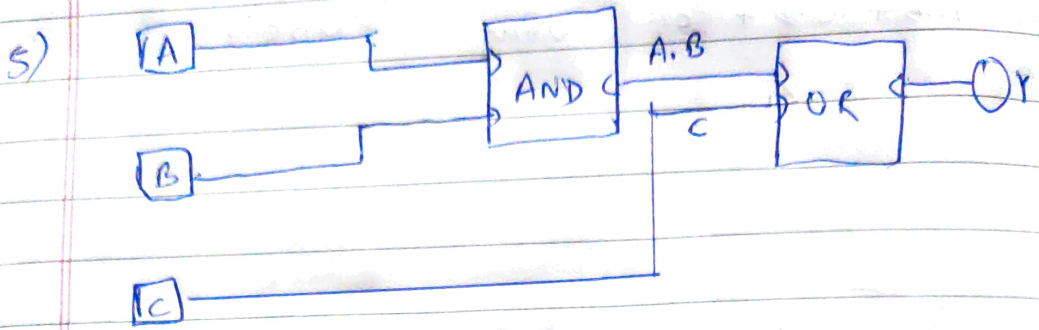
3)  $(AB + CD + E)$  using CMOS :



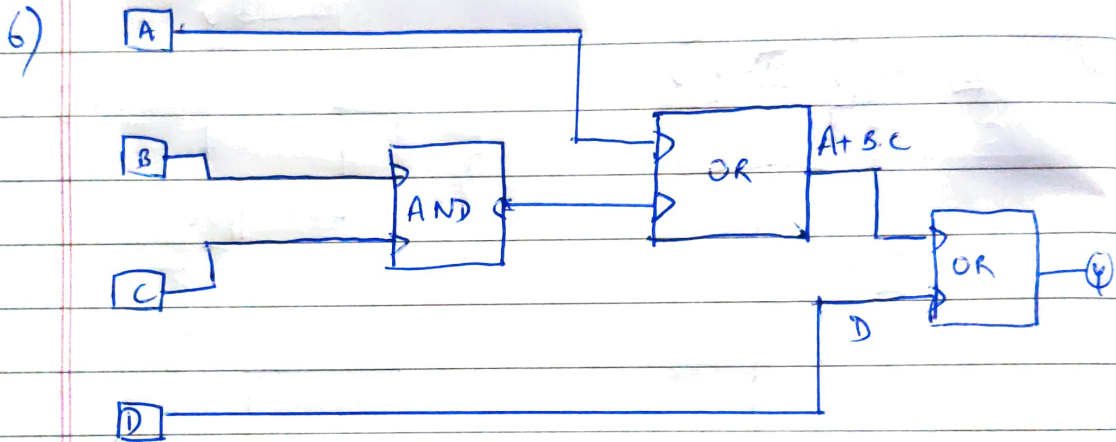
4)  $AB + CD + E$  using CMOS :







$$Y = A.B + C$$



$$Y = A + B.C + D$$