Design Procedure (Truth Table) and Circuit Diagrams

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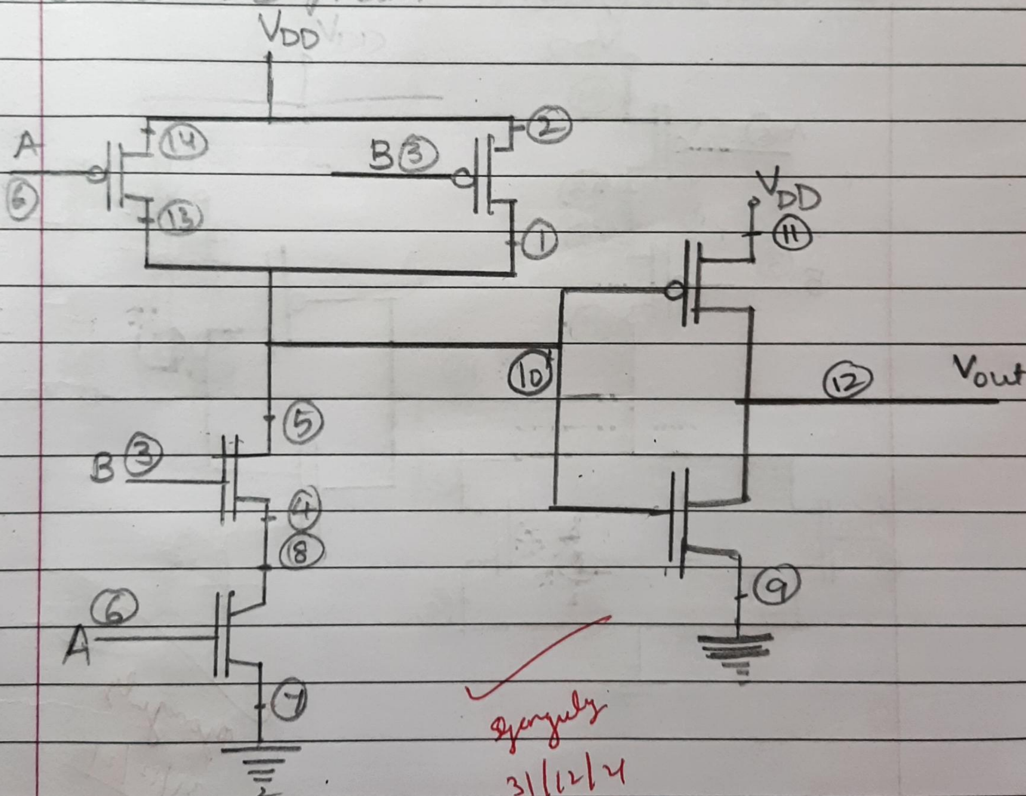
① AND

→ Truth Table

X	Y	X·Y
0	0	0
0	1	0
1	0	0
1	1	1

→ Circuit Diagram



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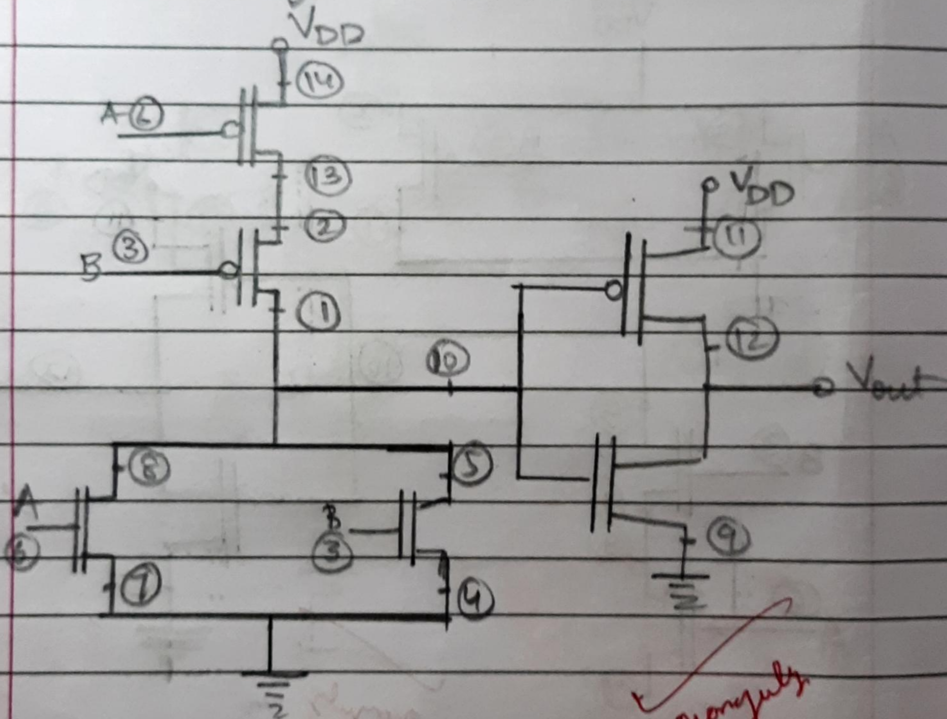
② OR

→ Truth Table

X	Y	X+Y
0	0	0
0	1	1
1	0	1
1	1	1

→ Circuit Diagram



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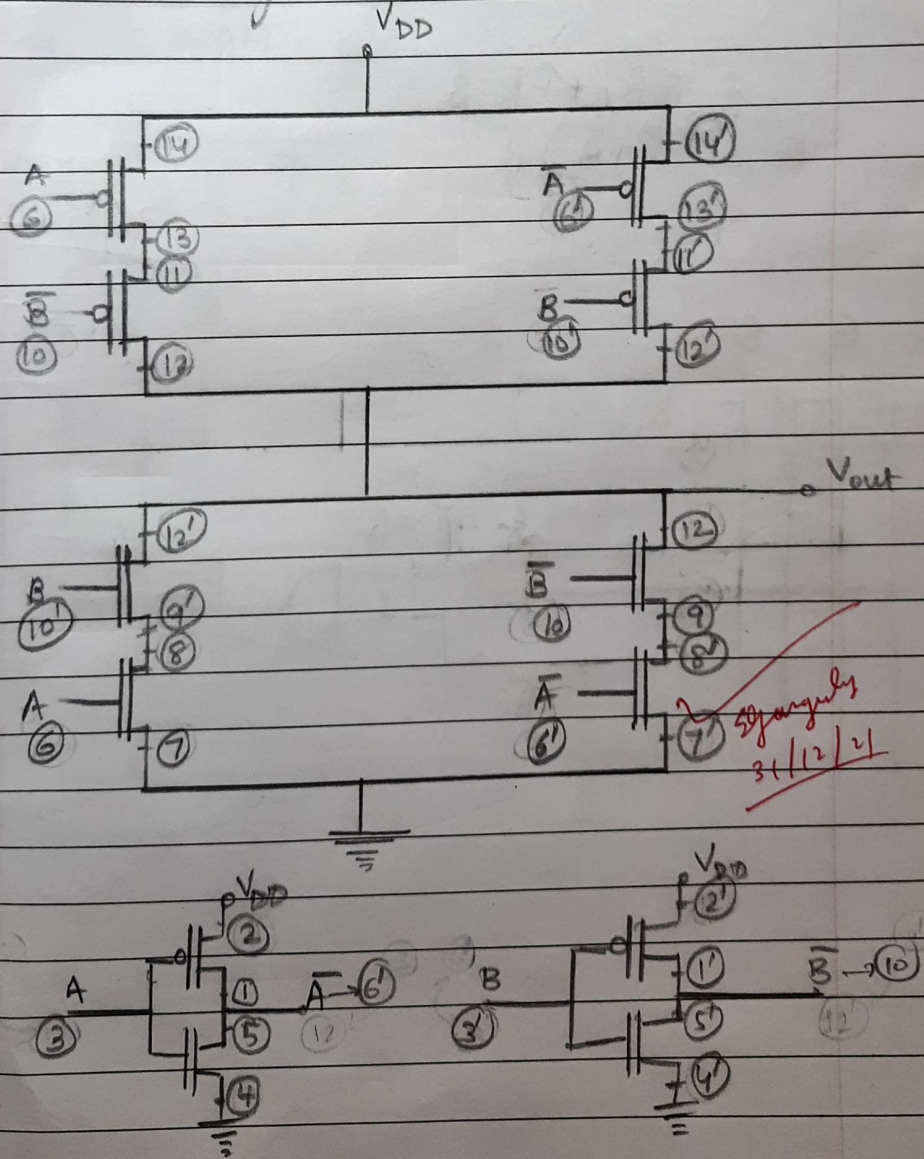
(3) XOR

→ Truth Table

X	Y	$X \oplus Y = \bar{X}Y + X\bar{Y}$
0	0	0
0	1	1
1	0	1
1	1	0

→ Circuit Diagram



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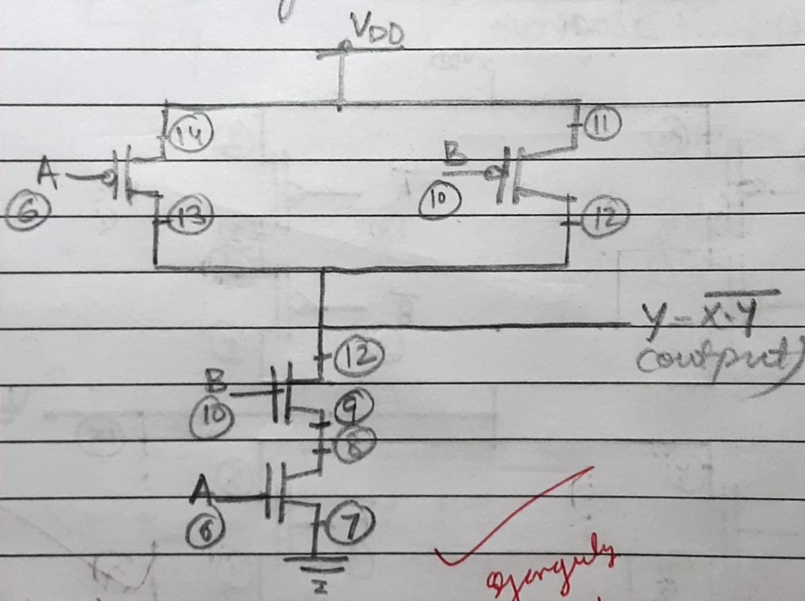
④ NAND

→ Truth Table

X	Y	$\overline{X \cdot Y}$
0	0	1
0	1	1
1	0	1
1	1	0

→ Circuit Diagram



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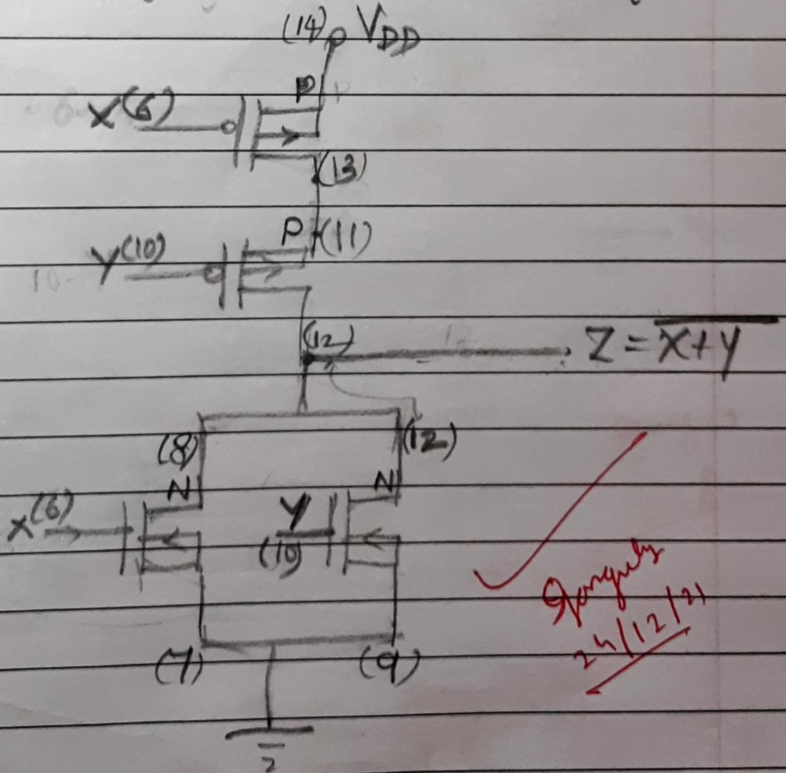
⑤ NOR

→ Truth Table

X	Y	$\overline{X+Y}$
0	0	1
0	1	0
1	0	0
1	1	0

= (X NOR Y)

→ Circuit Diagram (CMOS) (using IC HCF 4007)



X → pin 6
Y → pin 10

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(6) XNOR

→ Truth Table

X	Y	$X \odot Y$ = X XNOR Y
0	0	1
0	1	0
1	0	0
1	1	1

$(X \odot Y = XY + \bar{X}\bar{Y})$

→ Circuit Diagram