

17201012

XOR

Truth Table

| A | B | Output |
|---|---|--------|
| 0 | 0 | 0 |
| 0 | 1 | 1 |
| 1 | 0 | 1 |
| 1 | 1 | 0 |

$$\text{Output} = \overline{A}B + A\overline{B}$$

$$= \overline{\overline{A}B \cdot A\overline{B}} \quad [\text{De Morgan's law}]$$

$$= \overline{(\overline{A} + \overline{B})(A + \overline{B})} \quad [\sim \sim]$$

$$= (A + \overline{B})(\overline{A} + B) \quad \text{--- } \textcircled{i}$$

Schematic diagram:

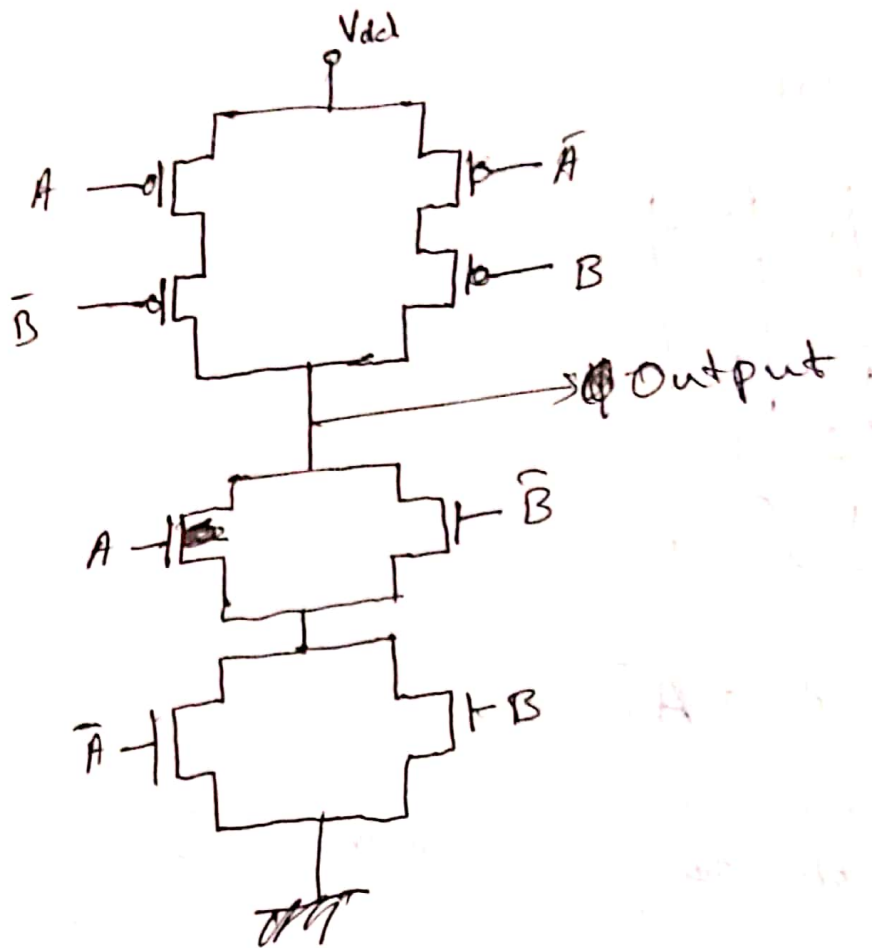
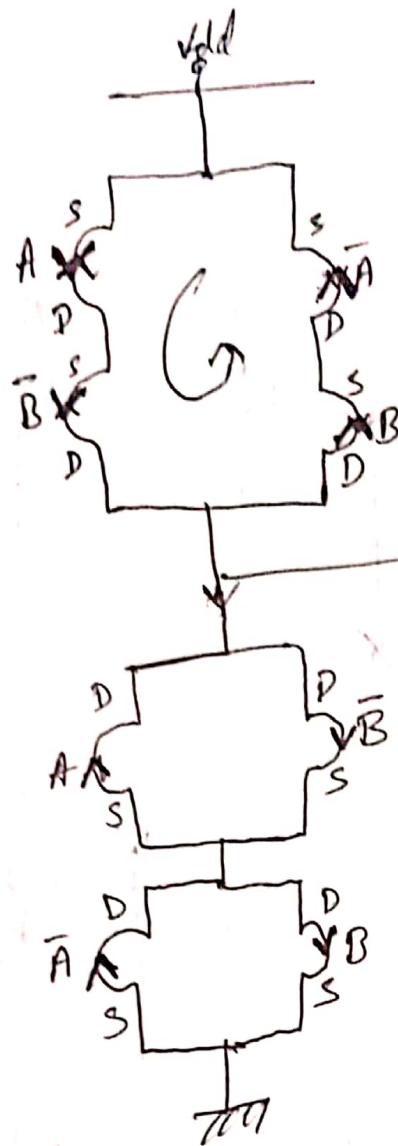


Fig: Drawn XOR using eqn (i)

Euler's path



[$\bar{A}\bar{B}BA$ flow of pmos]

[$\bar{A}\bar{B}BA$ flow of nmos]

[So this flow of ~~current~~ current is acceptable]

fig: Euler's path drawn using (i)

stick diagram

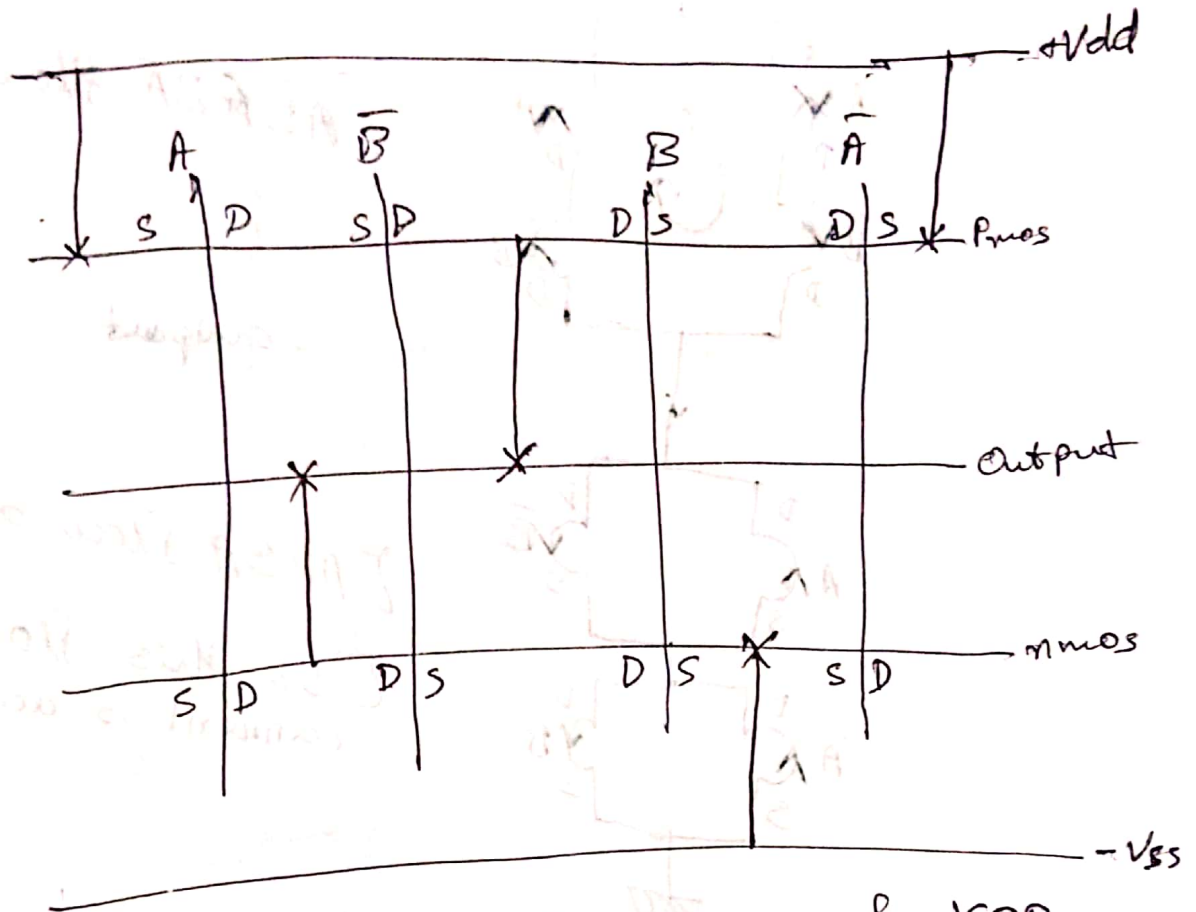


Fig: stick diagram of XOR