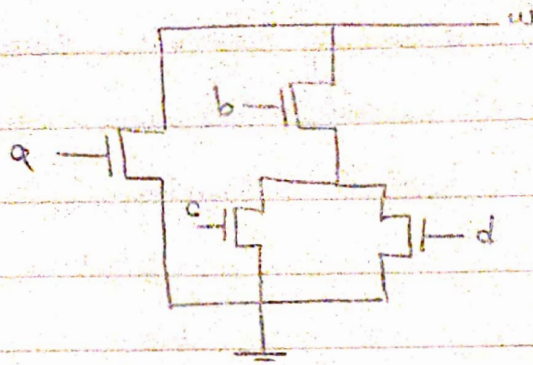
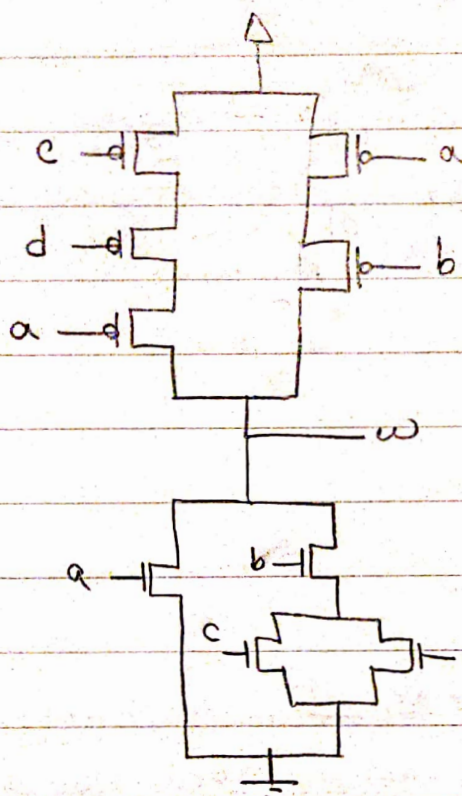


مسئله ۱



$$f = b(c+d) + a = bc + bd + a$$

$$F = (b + c\bar{d}) \cdot \bar{a} = \bar{a}b + \bar{c}d\bar{a}$$



-1 for use surplus Transistor(for "a" input)

+19

$$f = \bar{c}\bar{a}\bar{d} + \bar{a}b$$

$$\bar{p} = \overline{b(c+d)+a} = (\bar{b} + (\bar{c} \cdot \bar{d}))a$$

$$(\bar{b} + c\bar{d})\bar{a} = \bar{a}\bar{b} + \bar{a}c\bar{d}$$

+20