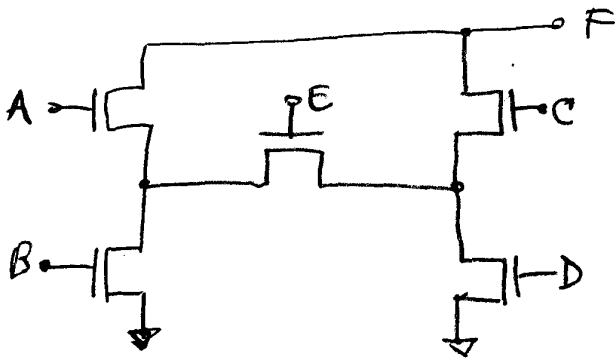


Quiz #2 Solution

Given below NMOS circuit. Find its equivalent PMOS.



$$\bar{F} = A \cdot B + A \cdot E \cdot D + C \cdot D + B \cdot E \cdot C$$

$$\Leftrightarrow F = (\bar{A} + \bar{B})(\bar{A} + \bar{E} + \bar{D})(\bar{C} + \bar{D})(\bar{B} + \bar{E} + \bar{C})$$

$$= [\bar{A} + \bar{B}\bar{E} + \bar{B}\bar{D}][\bar{C} + \bar{B}\bar{D} + \bar{D}\bar{E}]$$

$$= \bar{B}\bar{D} + (\bar{A} + \bar{B}\bar{E})(\bar{C} + \bar{D}\bar{E})$$

$$= \bar{B}\bar{D} + \bar{A}\bar{C} + \bar{A}\bar{D}\bar{E} + \bar{B}\bar{C}\bar{E} + \bar{B}\bar{D}\bar{E}$$

$$= \bar{B}\bar{D} + \bar{A}\bar{C} + \bar{A}\bar{D}\bar{E} + \bar{B}\bar{C}\bar{E}$$

(dropped when combined with $\bar{B}\bar{D}$)

The equivalent PMOS circuit :

