

1 题

$$\begin{aligned}F &= BC + \bar{A}\bar{B}\bar{C} + B\bar{C} \\&= B + \bar{A}\bar{B}\bar{C} \\&= B + \bar{A}\bar{C}\end{aligned}$$

2 题

$$\begin{aligned}F &= \overline{A + \bar{A}B + \bar{A}\bar{B}} + \overline{A + \bar{B}} \\&= \overline{A + \bar{B}} \\&= \bar{A}B\end{aligned}$$

3 题

$$\begin{aligned}F &= \bar{A}\bar{B}\bar{C}\bar{D} + A\bar{B}\bar{C} + A\bar{B}C\bar{D} + ABD + \bar{B}C\bar{D} + \bar{A} \\&= A\bar{B}\bar{C} + ABD + \bar{B}C\bar{D} + \bar{A} \\&= \bar{B}\bar{C} + BD + \bar{B}C\bar{D} + \bar{A} \\&= \bar{B}(\bar{C} + C\bar{D}) + BD + \bar{A} \\&= \bar{B}\bar{C} + \bar{D} + BD + \bar{A}\end{aligned}$$

4 题

不要用这个格式，用积之和

$$\begin{aligned}F &= AC + \bar{A}\bar{B}C \\&= (A + \bar{A}\bar{B})C \\&= (A + \bar{B})C\end{aligned}$$

5 题

$$\begin{aligned}F &= ABC + ABD + ABE + ACD + ACE + \overline{A + D + E} + \bar{B}\bar{C}D + \bar{B}\bar{C}E + \bar{B}\bar{D}\bar{E} + \bar{C}\bar{D}\bar{E} \\&= ABC + ABD + ABE + ACD + ACE + \bar{A}\bar{D}\bar{E} + \bar{B}\bar{C}D + \bar{B}\bar{C}E + \bar{B}\bar{D}\bar{E} + \bar{C}\bar{D}\bar{E} \\&= AB(C + D + E) + \bar{C}\bar{D}\bar{E} + ACD + ACE + \bar{A}\bar{D}\bar{E} + \bar{B}\bar{C}D + \bar{B}\bar{C}E + \bar{B}\bar{D}\bar{E} \\&= AB + AC(D + E) + \bar{C}\bar{D}\bar{E} + \bar{A}\bar{D}\bar{E} + \bar{B}\bar{C}D + \bar{B}\bar{C}E + \bar{B}\bar{D}\bar{E} \\&= AB + (\bar{A} + \bar{B})\bar{D}\bar{E} + AC(D + E) + \bar{C}\bar{D}\bar{E} + \bar{B}\bar{C}D + \bar{B}\bar{C}E \\&= AB + \bar{D}\bar{E} + AC(D + E) + \bar{C}\bar{D}\bar{E} + \bar{B}\bar{C}D + \bar{B}\bar{C}E \\&= AB + \bar{D}\bar{E} + AC(D + E) + \bar{B}\bar{C}D + \bar{B}\bar{C}E \\&= AB + AC(D + E) + \bar{B}\bar{C}(D + E) + \bar{D}\bar{E} \\&= AB + AC + \bar{B}\bar{C} + \bar{D}\bar{E} \\&= A(B + C) + \bar{B}\bar{C} + \bar{D}\bar{E} \\&= A + \bar{B}\bar{C} + \bar{D}\bar{E}\end{aligned}$$