

مجموعه حاصل ضرب

۹۵۲۶۳۱

① انفا

$$L(n, y, w, z) = \sum m(0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14)$$

$$= \underline{n'y'w'z'} + \underline{n'y'wz} + \underline{n'y'wz'} + \underline{n'yw'z} + \underline{n'ywz} + \underline{ny'w'z} + \underline{ny'wz} + \underline{nyw'z}$$

$$= nwz' + yw'z + n'y'z' + n'yz$$

$$L(n, y, w, z) = \prod M(2, 5, 4, 1, 11, 12, 10, 10)$$

$$= \underline{(n+y+w+z')} \cdot \underline{(n+y'+w+z)} \cdot \underline{(n+y'w'+z)} \cdot \underline{(n'+y+w+z)} \cdot \underline{(n'+y'+w'+z')} \cdot \underline{(n'+y'w'+z')}$$

$$\cdot \underline{(n'+y'+w+z')} \cdot \underline{(n'+y'+w+z)} = (y+w+z')(n+y'+z)(n'+w+z)(n'+y'+z')$$

TAT

$$\begin{aligned}
 L(u, y, w) &= \sum m(P, E, Y, V) = u'yw + uy'w' + uyw' + uyw \\
 &= u'yw + uy + uw' \\
 &= y(u + u'y) + uw' \\
 &= \boxed{uy + yw + uw'}
 \end{aligned}$$

$$\begin{aligned}
 L(u, y, w) &= \square M(u, l, r, w) = (u + y + w)(u + y + w')(u + y + w)(u' + y + w') \\
 &= (u + uy + uw' + uy + y + yw' + uw + yw)(uy + uw' + u'y' + y'w' + u'w + yw) \\
 &= uy + uw' + uy'w' + uyw + uy + uyw' + u'yw + yw \\
 &= uw' + uy + uy'w' + yw = \boxed{uw' + uy + yw}
 \end{aligned}$$

$$L(u, y, w, z) = \prod M(u, \alpha, v, q, 11, 18) \quad (2)$$

$$= (x+y+w'+z')(u+y'+w+z')(u+y'+w'+z')(u'+y+w+z')(u'+y+w'+z')(u'+y'+w+z')$$

$$= (u + \underbrace{xy' + uw + uz' + xy + yw + yz' + uw' + yw' + wz' + yz' + wz' + z'}_{A})$$

$$(xy + uw + \underbrace{uz' + xy' + yw + yz' + u'w' + yw' + wz' + xz' + yz' + wz' + z'}_{A})$$

$$(u' + \underbrace{u'y' + u'w' + u'z' + u'y + yw' + yz' + u'w' + yw' + wz' + u'z' + yz' + wz' + z'}_{A})$$

$$= (u + yw + yw' + z') \underbrace{(xy + uw + xy' + yw + u'w' + yw' + wz' + z')}_A (u' + w' + z')$$

$$= (uw' + uz' + \underbrace{u'yw + ywz' + x'yw' + y'w' + yw'z' + u'z' + w'z' + z'}_{A}) \cdot A$$

$$= (u'w' + \underbrace{u'yw' + z' + y'w'}_{A}) (xy + uw + u'y' + y'w + u'w' + yw' + z')$$

$$= \underbrace{xyw' + xyw' + uw'z' + u'yw' + ywz' + uwz' + u'y'z' + y'wz' + u'w'z' + yw'z' + z' + y'w' + z'}_{A}$$

$$+ u'yw' + u'y'w' + y'w'z' = \boxed{xyw' + z' + u'y'w'}$$

TAT

$$f(m, y, w, z) = \sum m(0, 1, 5, 7, 11, 13, 15)$$

(C) /wb

$$= \underbrace{x'y'w'z' + xy'w'z + x'yw'z' + xyw'z'}_{+xyz} + \underbrace{x'ywz' + xy'wz + x'yz' + xyz' + xy'z' + xyw'}$$

$$= xy'w' + x'y'z' + x'yz' + ywz' + xy'z' + xyw'$$

$$= x'y'w' + xyw' + x'z' + ywz' + xy'z'$$

$$= x'y'w' + xyw' + z'(x' + xy') + ywz'$$

$$= \boxed{xy'w' + xyw' + z'}$$

$$f(m, y, w) = \prod M(0, 1, 5, 7, 11, 13)$$

(C)

$$= (x+y+w)(x+y+w')(xy'+w)(x+y'+w')(x'+y'+w)(x'+y'+w')$$

$$= (xy + xw' + wy + y + yw' + xw + yw)(x + xy' + xw' + xy + y + yw' + xw + yw)(x' + x'y' + x'w' + x'y + y' + y'w' + x'w + y'w')$$

$$= (x+y)(x+y')(x'+y') = (x+xy'+xy)(x'+y') = (xy' + x'xy' + xy'y + x'xy'y') = \boxed{xy'}$$

$$f(m, y, w) = \sum m(5, 7) = xy'z' + xy'w = \boxed{xy'}$$

TAT

$$L. \Sigma(0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12) = \pi(1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12)$$

(9)

$$L. (n \oplus y) \oplus (w \oplus z)' = (ny' + n'y) \oplus (wz + w'z') =$$

$$= (ny' + n'y)(wz + w'z')' + (ny' + n'y)'(wz + w'z') = \underbrace{(ny' + n'y)(w'z' + wz)}_{w'z' + wz} + \underbrace{(ny' + n'y)'(wz + w'z')}_{ny' + ny}$$

(10)

$$n'y'w'z + ny'z'w + n'yw'z + n'y'z'w + n'y'wz + n'y'w'z' + nywz + nyw'z'$$

$$a) (n \oplus y) \oplus z = (ny' + n'y) \oplus z = (ny' + n'y)z' + (ny' + n'y)z$$

$$= ny'z' + n'yz' + \underbrace{ny'z + n'y'z + ynz + yy'z}_{(y+z) \cdot (y+z)} = \underbrace{ny'z' + n'yz' + ynz + yy'z}_{ny'z' + n'yz' + ynz + yy'z}$$

$$n \oplus (y \oplus z) = n \oplus (y'z + yz') = n(y'z + yz')' + n'(y'z + yz')$$

(*) : *نکته: در این مرحله از قانون دистриکوتیو استفاده می‌کنیم*

$$b) n + y = n \oplus y \oplus ny$$

$$n \oplus y \oplus ny = (ny' + n'y) \oplus ny = (ny' + n'y)(ny)' + (ny' + n'y)(ny)$$

$$= (ny' + n'y)(n' + y') + ((n' + y')(n + y'))(ny) = n'n'y' + n'n'y + y'ny' + y'n'y'$$

$$+ (n'n + n'y' + y'n + yy')ny = n'y + ny' + n'y'y' + ny = ny + n'y + ny'$$

$$= n(y + y') + n'y = n + n'y = n + y$$

TAT

module question_four (n, y, z, A, B, C, D);

input A, B, C, D;

output n, y, z;

assign n = ($\neg A \& B \& C$) & ($\neg(A \& B)$) & ($A \& \neg D$);

assign y = ($\neg((A \& \neg D) \mid (\neg(C \& B)))$);

assign z = ($\neg(C \& B)$) & ($B \& D \& \neg C$);

endmodule

(8)

primitive more_one (n, A, B, C)

output n;

input A, B, C;

table

0 0 0 0;

0 0 1 0;

0 1 0 0;

0 1 1 1;

1 0 0 0;

1 0 1 1;

1 1 0 1;

1 1 1 1;

end table

end primitive

(9)

TAT

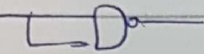
$$f(x, y, z) = z(x \oplus y)' + xy'$$

سوال اول

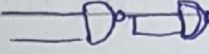
$$= z(xy' + x'y)' + xy' = z((x' + y) + (xy)') + xy'$$

$$= z(xy + x'y') + xy' = xyz + x'y'z + xy'$$

not:



and:



or:

