

Q 1

$$xy + x'z + yz$$

$$= xy + x'z + (1)yz$$

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

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

$$= \cancel{xy(1+x)} + \cancel{(x'z)(1+y)}$$

$$= xy \underbrace{(1+\cancel{x})}_1 + (x'z) \underbrace{(1+\cancel{y})}_1$$

$$= \boxed{xy + x'z} \checkmark$$

Q2

$$(x+y)(x'+z)(y+z) = (x+y) - (x' \cdot (y+z))$$

$$(y+z) \left( \underbrace{x \cdot x'}_0 + x \cdot z + yx' + yz \right) = \underbrace{x \cdot x'}_0 + xz$$

$$\cancel{[xz + yx' + yz]} = xz + \cancel{[yx' + yz]}$$

$$\cancel{(1 \cdot z \cdot y + y \cdot y \cdot x' + y \cdot y \cdot z)} + \cancel{(xz \cdot 1)}$$

$$= \cancel{-2(xy + yx' + yz)}$$

$$xz(y+1) - (yx' + yz) + yz$$

$$xz = -x'yz + yz$$

$$xz \underbrace{(1 + x + x')}_1 = yz$$

$$x' + z)$$

$$xz + x'y + yz$$

$$\boxed{x'y + yz} \quad \checkmark$$

$$+ yx' = + yz)$$

$$xz + x'y - yz$$

$$\cancel{z(x+y)}$$

$$xz + x'y + (x' + x) yz$$

$$= \cancel{x'y + x'z} + xz + (x'y + x'y z) + x y z$$

$$x'(y + yz) + xz(y + 1)$$

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

$$= yz(x' + 1)$$

Q3 a)

$$F = B'D + A'D + BD$$

A	B	D	F	
0	0	0	0	$m_0$
0	0	1	1	$m_1$
0	1	0	0	$m_2$
0	1	1	1	$m_3$
1	0	0	0	$m_4$
1	0	1	1	$m_5$
1	1	0	0	$m_6$
1	1	1	1	$m_7$

$$POM \text{ ~~SOM~~ } = \Sigma (1, 3, 5, 7)$$

$$SOM = \Sigma (0, 2, 4, 6)$$

Q-3-b

$$F = B'D + A'D + BD$$

$$= D(B' + A' + B)$$

$$= D(\underbrace{B' + B}_{1} + A')$$

$$= D \cdot 1$$

$$= \underline{\underline{D}}$$