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

$= xy + x'z + xyz + x'yz = xy\underbrace{(1+z)}_{1} + x'z\underbrace{(y+1)}_{1} = xy + x'z$

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

$(\underbrace{xx'}_{1} + xz + x'y + yz)(y+z) = (\underbrace{xx'}_{1} + xz + yx' + yz)$

$xyz + xz + x'y + x'yz + yz + yz = xz + yx' + yz$

$x'y\underbrace{(z+1)}_{1} + yz\underbrace{(x+1)}_{1} + xz = xz + yx' + yz$

$x'y + yz + xz = x'y + yz + xz$ ✓

3) $F(A,B,C,D) = B'D + A'D + BD$

A	B	C	D	minterm	maxterm	
0	0	0	0	$\bar{A}\bar{B}\bar{C}\bar{D}$ m_0	$A+B+C+D$	M_0
0	0	0	1	$\bar{A}\bar{B}\bar{C}D$ m_1	$A+B+C+\bar{D}$	M_1
0	0	1	0	$\bar{A}\bar{B}C\bar{D}$ m_2	$A+B+\bar{C}+D$	M_2
0	0	1	1	$\bar{A}\bar{B}CD$ m_3	$A+B+\bar{C}+\bar{D}$	M_3
0	1	0	0	$\bar{A}B\bar{C}\bar{D}$ m_4	$A+\bar{B}+C+D$	M_4
0	1	0	1	$\bar{A}B\bar{C}D$ m_5	$A+\bar{B}+C+\bar{D}$	M_5
0	1	1	0	$\bar{A}BC\bar{D}$ m_6	$A+\bar{B}+\bar{C}+D$	M_6
0	1	1	1	$\bar{A}BCD$ m_7	$A+\bar{B}+\bar{C}+\bar{D}$	M_7
1	0	0	0	$A\bar{B}\bar{C}\bar{D}$ m_8	$\bar{A}+B+C+D$	M_8
1	0	0	1	$A\bar{B}\bar{C}D$ m_9	$\bar{A}+B+C+\bar{D}$	M_9
1	0	1	0	$A\bar{B}C\bar{D}$ m_{10}	$\bar{A}+B+\bar{C}+D$	M_{10}
1	0	1	1	$A\bar{B}CD$ m_{11}	$\bar{A}+B+\bar{C}+\bar{D}$	M_{11}
1	1	0	0	$AB\bar{C}\bar{D}$ m_{12}	$\bar{A}+\bar{B}+C+D$	M_{12}
1	1	0	1	$AB\bar{C}D$ m_{13}	$\bar{A}+\bar{B}+C+\bar{D}$	M_{13}
1	1	1	0	$ABC\bar{D}$ m_{14}	$\bar{A}+\bar{B}+\bar{C}+D$	M_{14}
1	1	1	1	$ABCD$ m_{15}	$\bar{A}+\bar{B}+\bar{C}+\bar{D}$	M_{15}

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

$= (AB'CD + AB'C'D + A'B'CD + A'B'C'D) + (A'BCD + A'BC'D + A'B'CD + A'B'C'D)$
$+ (ABCD + ABC'D + A'BCD + A'B'C'D)$

$= AB'CD + AB'C'D + A'B'CD + A'B'C'D + A'BCD + A'BC'D + ABCD$
$+ ABC'D$

$= \sum (1,3,5,7,9,11,13,15)$, sum of minterm

$= \prod (0,2,4,6,8,10,12,14)$, product of maxterm

3) b) $F(A,B,C,D) = B'D + A'D + BD = D(\underbrace{A' + B + B'}_{1}) = D$