

CSC 355
A 1

Q7 a) $\Sigma_m(0, 2, 4, 5, 7, 9, 12, 13, 14)$

AB \ CD	00	01	11	10
00	1	0	0	1
01	1	1	1	0
11	1	1	0	1
10	0	1	0	0

$$SOP = B\bar{C} + \bar{A}\bar{B}\bar{D} + A\bar{B}D + AB\bar{D} + A\bar{C}D$$

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

b) $F(W, X, Y, Z) = \Pi M(1, 2, 4, 5, 7, 8, 10, 15)$

WX \ YZ	00	01	11	10
00	1	0	1	0
01	0	0	0	1
11	1	1	0	1
10	0	1	1	0

$$SOP = \bar{X}YZ + XY\bar{Z} + WX\bar{Y} + W\bar{Y}Z + \bar{W}\bar{X}\bar{Y}\bar{Z}$$

$$SOP (W + Y + \bar{Z})(X + \bar{Y} + Z)(W + \bar{X} + Y)(\bar{X} + \bar{Y} + \bar{Z})(\bar{W} + X + Z)$$

c) $F(A, B, C, D) = \Sigma_m(0, 1, 7, 9, 13, 14, 15)$
 $\bar{d} = \Sigma_m(5, 6, 10, 12)$

AB \ CD	00	01	11	10
00	1	1	0	0
01	0	X	1	X
11	X	1	1	1
10	0	1	0	X

$$SOP = \bar{C}D + BC + \bar{A}\bar{B}\bar{C}$$

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