

Assignment-B

1.  $F(A, B) = \sum m(1, 2, 3)$

A \ B	B <sub>0</sub>	B <sub>1</sub>
A <sub>0</sub>	0	1
A <sub>1</sub>	2	3

$$F = B + A$$

2.  $F(A, B, C) = \sum m(0, 1, 3, 7)$

A \ BC	$\bar{B}\bar{C}$	$\bar{B}C$	$BC$	$B\bar{C}$
A <sub>0</sub>	0	1	3	2
A <sub>1</sub>	4	5	7	6

$$F = \bar{A}\bar{B} + BC$$

3.  $F(A, B, C, D) = \sum m(0, 2, 5, 7, 8, 10, 13, 15)$

AB \ CD	$\bar{C}\bar{D}$	$\bar{C}D$	$CD$	$C\bar{D}$
$\bar{A}\bar{B}00$	0	1	3	2
$\bar{A}\bar{B}01$	4	5	7	6
$\bar{A}\bar{B}11$	12	13	15	14
$\bar{A}\bar{B}10$	8	9	11	10

$$F = \bar{D} + D$$

$$F = 1$$

4.  $F(A, B, C) = \sum m(1, 2, 4, 6) + d(3, 5)$

A \ BC	$\bar{B}\bar{C}$	$\bar{B}C$	$BC$	$B\bar{C}$
A <sub>0</sub>		1	X	1
A <sub>1</sub>	1	X	0	1

$$F = B\bar{C} + A\bar{C} + \bar{B}C$$

5.  $F(W, X, Y, Z) = \sum m(0, 1, 2, 5, 6, 7, 8, 9, 10, 14)$

WX \ YZ	$\bar{Y}\bar{Z}$	$\bar{Y}Z$	$YZ$	$Y\bar{Z}$
$\bar{W}\bar{X}$	1	1		1
$\bar{W}X$		1	1	1
$W\bar{X}$				1
$WX$	1	1		1

$$F = \bar{X}\bar{Y} + \bar{W}XZ + Y\bar{Z}$$



6.]  $F(A, B, C, D) = \pi(M(0, 1, 2, 4, 5, 7, 9, 12, 13, 15))$

AB \ CD	$\bar{C}\bar{D}$	$\bar{C}D$	$CD$	$C\bar{D}$
$\bar{A}\bar{B}$	0	0	1	0
$\bar{A}B$	0	0	0	
$AB$	0	0	0	
$A\bar{B}$		0		

$$\bar{F} = 1 + 11 + 111 + 1111$$

$$\bar{F} = \bar{A}\bar{B}\bar{D} + \bar{C}D + BD + B\bar{C}$$

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

7.]  $F(A, B, C) = \Sigma(1, 2, 3, 5, 6)$

A \ BC	$\bar{B}\bar{C}$	$\bar{B}C$	$BC$	$B\bar{C}$
$\bar{A}$		1	1	1
$A$		1		1

$$F = \bar{B}C + \bar{A}B + B\bar{C}$$

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

8.]  $F(A, B, C, D) = \Sigma(0, 1, 2, 8, 10, 11, 14) + d(5, 7, 15)$

AB \ CD	$\bar{C}\bar{D}$	$\bar{C}D$	$CD$	$C\bar{D}$
$\bar{A}\bar{B}00$	1	1		1
$\bar{A}B01$		X	X	
$AB11$			X	1
$A\bar{B}10$	1		1	1

$$F = \bar{D} \cdot \bar{B} + \bar{A}\bar{B}\bar{C} + AC$$