

Task 01 : (a)

A	B	Output
0	0	0
0	1	1
1	0	1
1	1	1

Task

1(b)

A

B

X

0

0

0

0

1

0

1

0

0

1

1

1

Task

1(c) :

A

B

X

0

0

0

0

1

1

1

0

1

1

1

0

DLD LAB Assignment 05

Task 02:-

$$\bar{A}BC + A\bar{B}\bar{C} + \bar{A}\bar{B}C + A\bar{B}C + ABC$$

Sol:-

$$\Rightarrow \bar{A}BC + \bar{B}\bar{C}(A + \bar{A}) + AC(\bar{B} + B)$$

$$\Rightarrow \bar{A}BC + \bar{B}\bar{C} + AC$$

$$\Rightarrow C(A + \bar{A}B) + \bar{B}\bar{C}$$

$$\Rightarrow C(A + B) + \bar{B}\bar{C}$$

$$\Rightarrow AC + BC + \bar{B}\bar{C}$$

A	B	C	AC	BC	$\bar{B}\bar{C}$	Y
0	0	0	0	0	1	1
0	0	1	0	0	0	0
0	1	0	0	0	0	0
0	1	1	0	1	0	1
1	0	0	0	0	1	1
1	0	1	1	0	0	1
1	1	0	0	0	0	0
1	1	1	1	1	0	1

01	1	0
11	0	1
10	1	0

$$P: (A+B+C)(A+\bar{B}+\bar{C})(\bar{A}+\bar{B}+C) \\ (\bar{A}+B+\bar{C})$$

P:

$$\underline{\text{ask}} \quad \underline{03} : \bar{A}\bar{B}C + A\bar{B}\bar{C} + ABC$$

A	B	C	X
0	0	0	0
0	0	1	1 → $\bar{A}\bar{B}C$
0	1	0	0
0	1	1	0
1	0	0	1 → $A\bar{B}\bar{C}$
1	0	1	0
1	1	0	0
1	1	1	1 → ABC

Task 04: $(A+B+C)(A+\bar{B}+C)(A+\bar{B}+\bar{C})$
 $(\bar{A}+B+\bar{C})(\bar{A}+\bar{B}+C)$

A	B	C	X
0	0	0	0
0	0	1	1
0	1	0	0
0	1	1	0
1	0	0	1
1	0	1	0
1	1	0	0
1	1	1	1

Task 05 :

$$\bar{A}\bar{B}C + \bar{A}B\bar{C} + A\bar{B}\bar{C} + ABC$$

001 010 110 111

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

Task 06 :-

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

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

1 1 1 1 0 0 1 1

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

Task 07 :-

(a)

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

SOP: $BC + AB + \bar{A}\bar{B}\bar{C}$

POS: ~~$\bar{A}\bar{B}\bar{C}$~~ ~~$AB\bar{C}$~~
 $(A + B + \bar{C})(\bar{A} + B + \bar{C})(\bar{A} + B)$

(b):

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

~~POS:~~

~~SOP: $\bar{A}\bar{B} + \bar{A}\bar{C} + \bar{A}BC + \bar{A}\bar{B} + AC + \bar{B}$~~

POS: ~~$\bar{A}\bar{B}\bar{C}$~~ $(A + \bar{B} + \bar{C})(\bar{A} + \bar{B} + C)$

SOP: $\bar{B} + \bar{A}\bar{C} + AC$

(c):

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

SOP:- $\bar{A}\bar{C} + \bar{A}B + A\bar{B}D + \bar{B}\bar{C}D$

Product terms:- $\bar{A}\bar{B}\bar{C}\bar{D} + \bar{A}\bar{B}\bar{C}D + \bar{A}\bar{B}C\bar{D} + \bar{A}\bar{B}CD + \bar{A}B\bar{C}\bar{D} + \bar{A}B\bar{C}D + \bar{A}BC\bar{D} + \bar{A}BCD + A\bar{B}\bar{C}\bar{D} + A\bar{B}\bar{C}D + A\bar{B}C\bar{D} + A\bar{B}CD + AB\bar{C}\bar{D} + AB\bar{C}D + ABC\bar{D} + ABCD$

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

(d)

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

SOP :- $\bar{D} + B\bar{C} + A\bar{B}C$

Product terms: $\bar{A}\bar{B}\bar{C}\bar{D} + \bar{A}B\bar{C}\bar{D} + \bar{A}B\bar{C}D + \bar{A}B\bar{C}\bar{D} + AB\bar{C}\bar{D} + AB\bar{C}D + A\bar{B}\bar{C}\bar{D} + A\bar{B}\bar{C}D + A\bar{B}C\bar{D} + ABC\bar{D} + A\bar{B}C\bar{D} + A\bar{B}C\bar{D}$

~~SOP~~ :

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