CS & IT

ENGINEERING

Digital Logic

Minimization

DPP 02

Discussion Notes

By- CHANDAN SIR









For the given Boolean function $f(A, B, C) = \sum_{m} (0,1,5,6)$ Simplified output will be



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

B.
$$\overline{A}\overline{B} + \overline{B}\overline{C} + AB\overline{C}$$

$$A\overline{B} + \overline{B}\overline{C} + \overline{A}\overline{B}C$$

D.
$$\overline{A}\overline{B} + \overline{B}\overline{C} + AB\overline{C}$$

For the given Boolean function



$$f(A, B, C) = \sum_{m} (1,3,6,7) + \sum_{m} d(0,2)$$

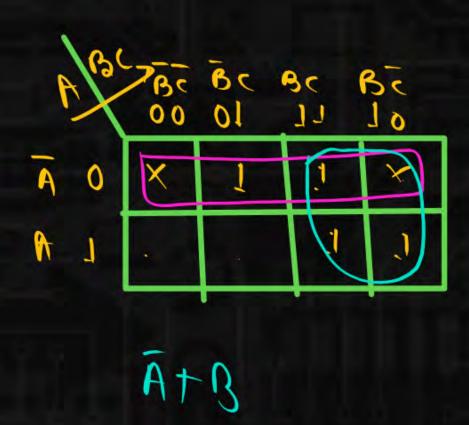
simplified output will be

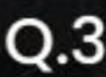
A.
$$A+B$$

B.
$$B+C$$

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

D.
$$\overline{A}C + AB$$



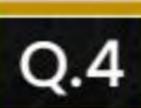


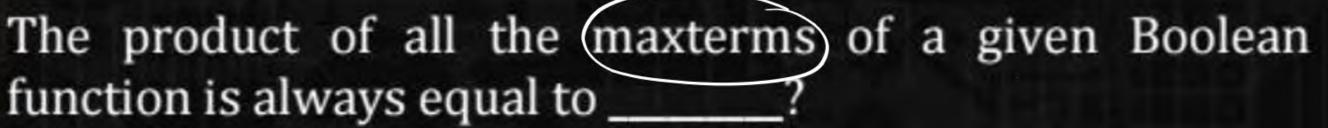
What is the other canonical form of the given function



f (A, B, C) =
$$\sum_{m} (0,1,2,3,4,5,6,7) = TIM(_)$$

- A. $f(A,B,C) = \Pi_M(0,1,2,3,4,5,6,7)$
- B. $f(A, B, C) = \Pi_M(0, 2, 4, 7) \downarrow$
- $f(A,B,C) = \Pi_M(1,2,4,7)$
- Does not exist









В.



Complement o	f the function
--------------	----------------

A	B	Maxterm /	
0	0	A+B	
0	1	Atis	
t	σ	Atg	
L	J	A+ B	





Q.5

The simplified SOP form of the k-map is



/		
	Α.	
	A.	

Ÿ



X

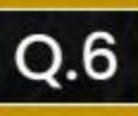


 $\bar{X}\bar{Y}$



 $X + \overline{Y}$

00	1	1	X	1
01	0	0	0	0
11	0	0	0	0
10	1	X	X	1

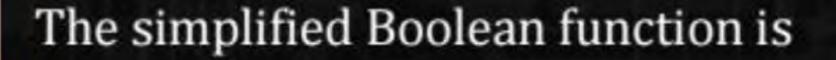


The Boolean function f (A, B, C, D) = \sum_{m} (5,7,9,11,13,15) is independent of variables





Q.7





- A. $A \oplus B \oplus C$
- B. $A \oplus B \square C$
- C. $A \square B \square C$
- D. $A \odot (B \oplus C)$

$$\overline{ABC+ABC+ABC+ABC}$$

$$\overline{A(BC+BC)+A(BC+BC)}$$

$$\overline{A(BBC)+A(BBC)}$$

$$\overline{A(BBC)+A(BBC)}$$

$$\overline{AX+AX=ABX=AB(BBC)}$$

Q.8

The simplified Boolean expression



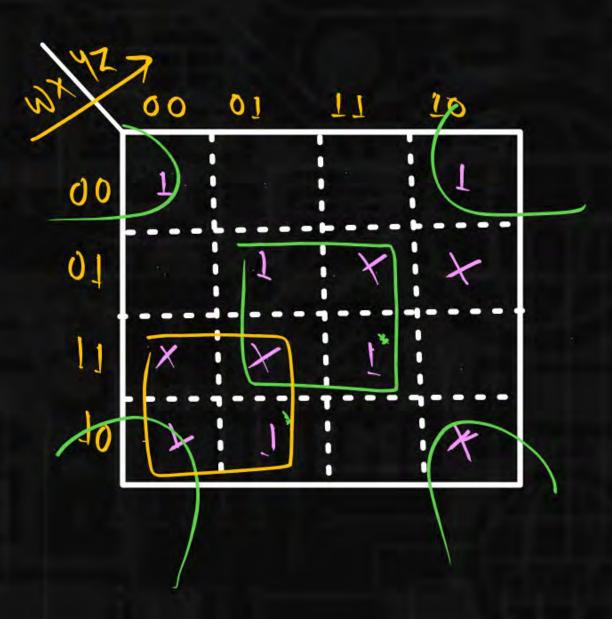
$$f(w, x, y, z) = \sum_{m} (0,2,5,9,15) + \sum_{d} (6,7,8,10,12,13)$$

$$\overline{X}\,\overline{Z} + W\,\overline{Y} + X\,Z$$

B.
$$\bar{x}\bar{z} + w\bar{y} + x\bar{z}$$

C.
$$x \overline{z} + w \overline{y} + \overline{x} z + \chi z$$

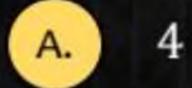
D.
$$\overline{X}\overline{Z} + \overline{W}\overline{Y} + XZ$$



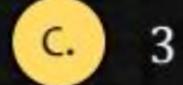


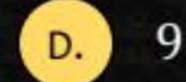
The minimum number of NAND gate required to simplify k-map



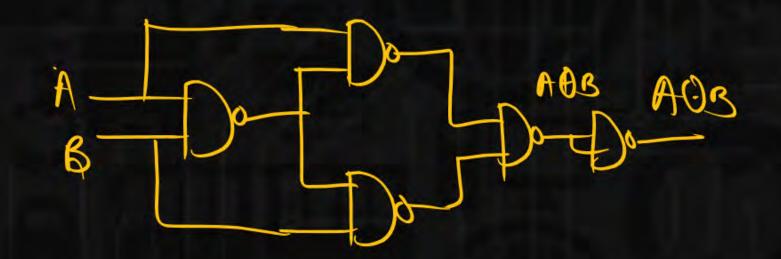








A BC	00	01	11	10
0	1	1	0	0
1	0	0	1	1





The simplified expression of k-map is independent of variables



Δ	- 1	Λ
7.	- 9	Α
	1	

B. B

(c.) (c

D. A, B and C

$A \stackrel{BC}{\swarrow}$	00	01	11	10	
0	1	1	1	1	
1	1	1	1	1	



