EE, EC, CS & IT ENGINEERING

Digital Logic

K-map Basic

Minimization

Discussion

DPP Solution 2

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01 Questions

02 Discussion

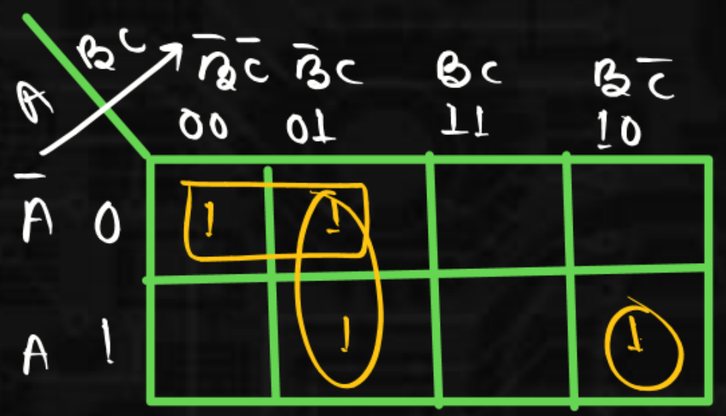
Q.1 For the given Boolean function f (A, B, C) = $\sum_m(0,1,5,6)$ Simplified output will be

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

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

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

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



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

Q.2

For the given Boolean function

$$f(A, B, C) = \sum_m(1,3,6,7) + \sum d(0,2)$$

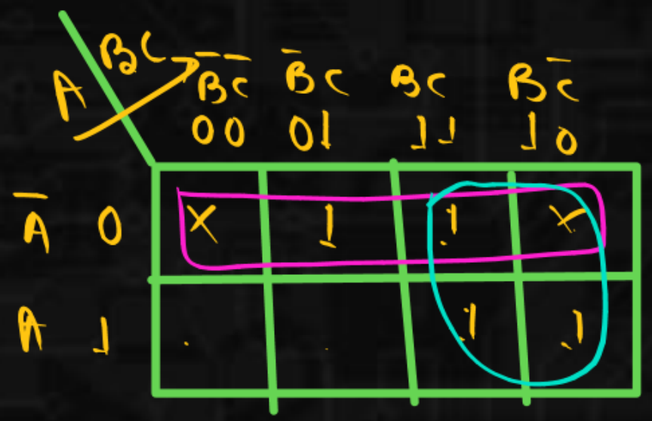
simplified output will be

A. $A+B$

B. $B+C$

C. $\bar{A}+B$

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



$\bar{A}+B$

Q.3 What is the other canonical form of the given function

$$f(A, B, C) = \sum_m (0,1,2,3,4,5,6,7)$$

A. $f(A,B,C) = \Pi_M (0,1,2,3,4,5,6,7)$

B. $f(A, B, C) = \Pi_M (0, 2, 4, 7)$

C. $f(A,B,C) = \Pi_M (1,2,4,7)$

D. Does not exist

Q.4 The product of all the maxterms of a given Boolean function is always equal to _____?

A. 0

B. 1

C. 2

D. Complement of the function

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

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

$A[1+\bar{B}+B]\cdot\bar{A}[1+\bar{B}+B]$

$\bar{A}\cdot A=0$

A	B	Maxterm
0	0	$A+B$
0	1	$A+\bar{B}$
1	0	$\bar{A}+B$
1	1	$\bar{A}+\bar{B}$

A	B	f
0	0	0
0	1	1
1	0	1
1	1	0

$\bar{A}B$

$A\bar{B}$

$f = (A+B)\cdot(\bar{A}+\bar{B})$

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

Q.5

The simplified SOP form of the k-map is

A. Y

B. $\overline{X}$

C. $\overline{X}\,\overline{Y}$

D. $X+\overline{Y}$

wx \ yz	00	01	11	10
00	1	1	x	1
01	0	0	0	0
11	0	0	0	0
10	1	x	x	1

$\overline{X}$

Any

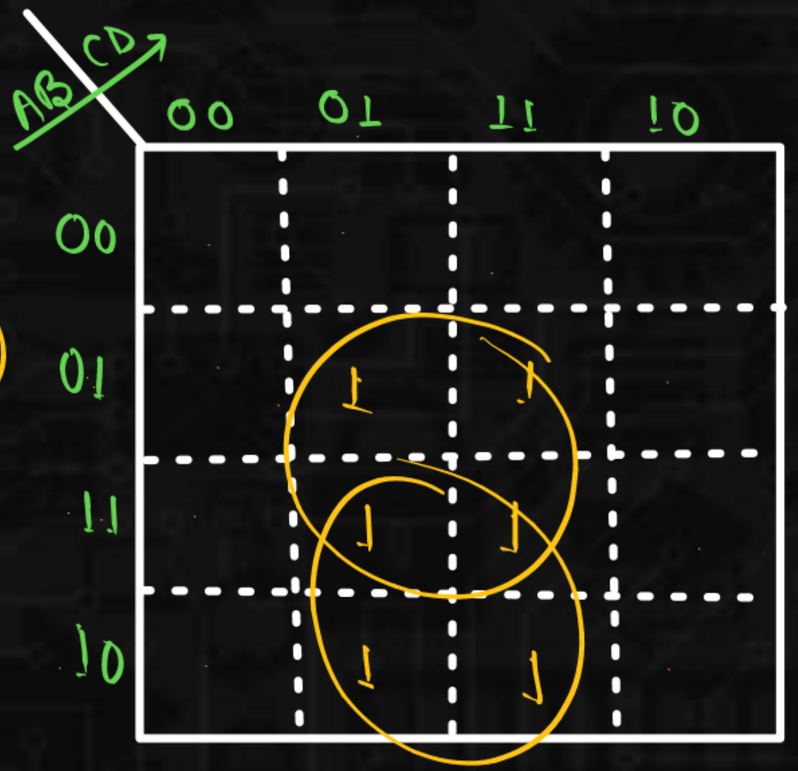
Q.6 The Boolean function f (A, B, C, D) = $\sum_m(5,7,9,11,13,15)$ is independent of variables

A. A

B. C

C. B

D. B and C



Q.7

The simplified Boolean function is

A. $A \oplus B \oplus C$

B. $A \oplus B \square C$

C. $A \square B \square C$

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

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

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

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

$\bar{A}(\overline{B \odot C}) + A(B \odot C)$

$B \odot C = X$

$= \bar{A}\bar{X} + AX = A \odot X = A \odot (B \odot C)$

Q.8

The simplified Boolean expression

$$f(w, x, y, z) = \sum_m (0,2,5,9,15) + \sum_d (6,7,8,10,12,13)$$

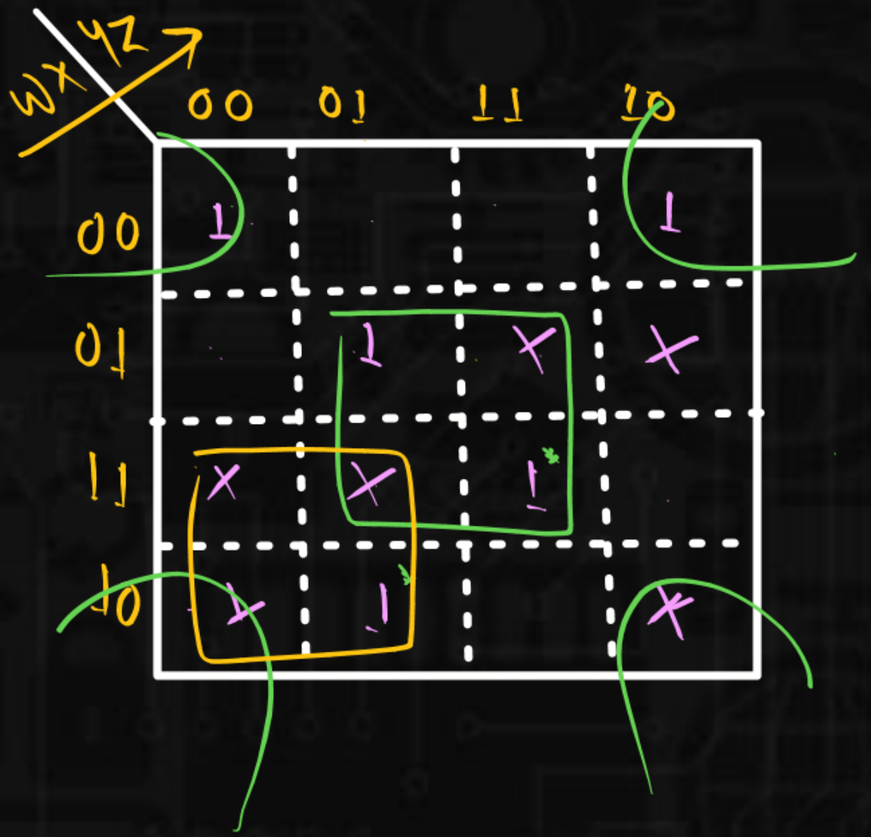
A. $\bar{x}\bar{z} + w\bar{y} + xz$

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

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

D. $\bar{x}\bar{z} + \bar{w}\bar{y} + xz$

$\bar{x}\bar{z} + w\bar{y} + xz$



Q.9 The minimum number of NAND gate required to simplify k-map

A. 4

B. 5

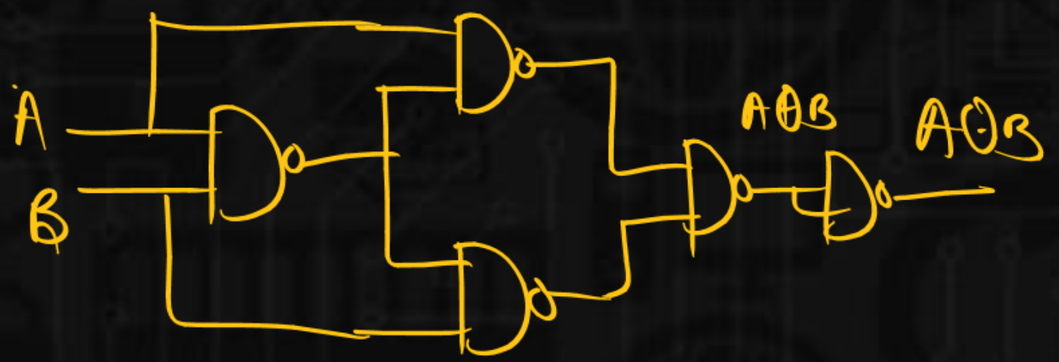
C. 3

D. 9

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

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

$A \odot B$



Q.10 The simplified expression of k-map is independent of variables

A. A

B. B

C. C

D. A, B and C

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

= 1


THANK YOU GW
SOLDIERS !