COMPUTER SCIENCE & IT

DIGITAL LOGIC

Lecture No. 05

Combinational Circuit

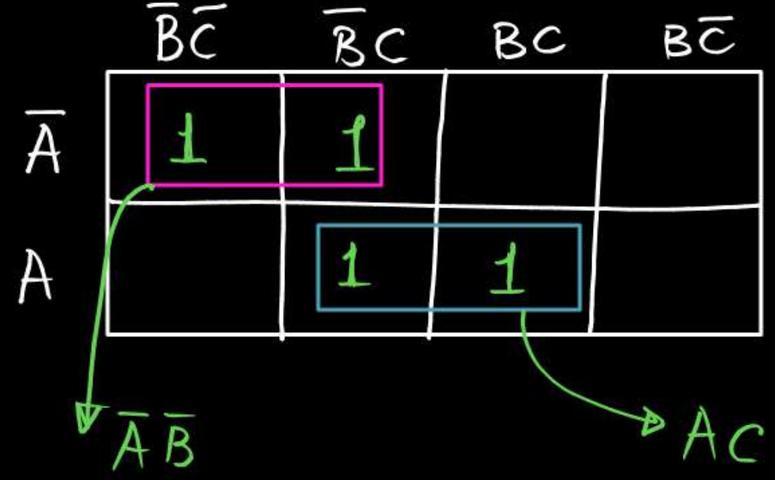
By- Chandan Gupta Sir

K- Map

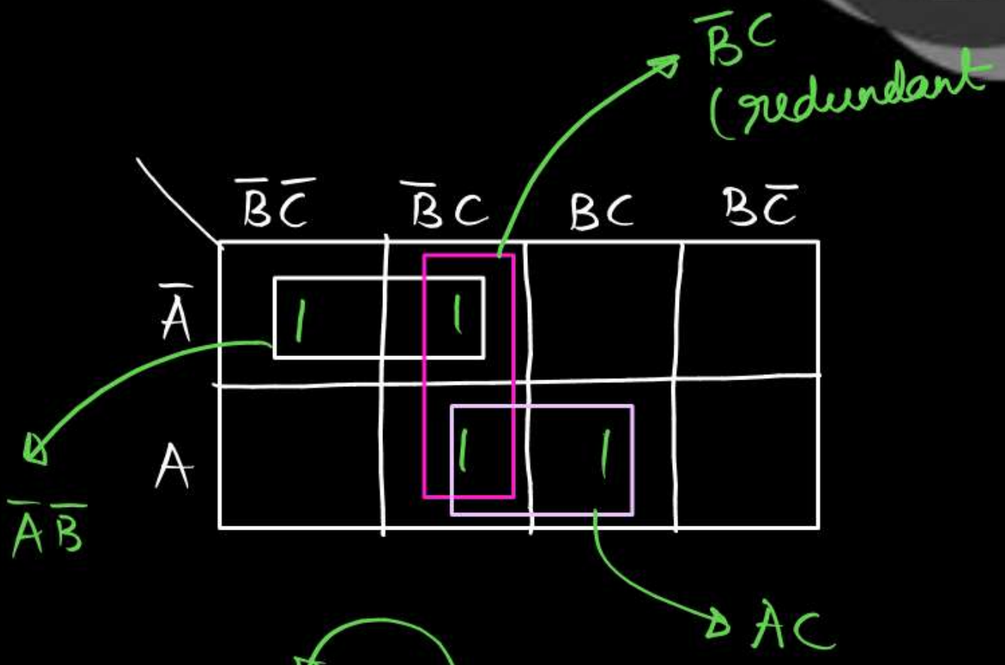
K-Map Cont.

Question

$f(A, B, C) = \Sigma(0, 1, 5, 7)$



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



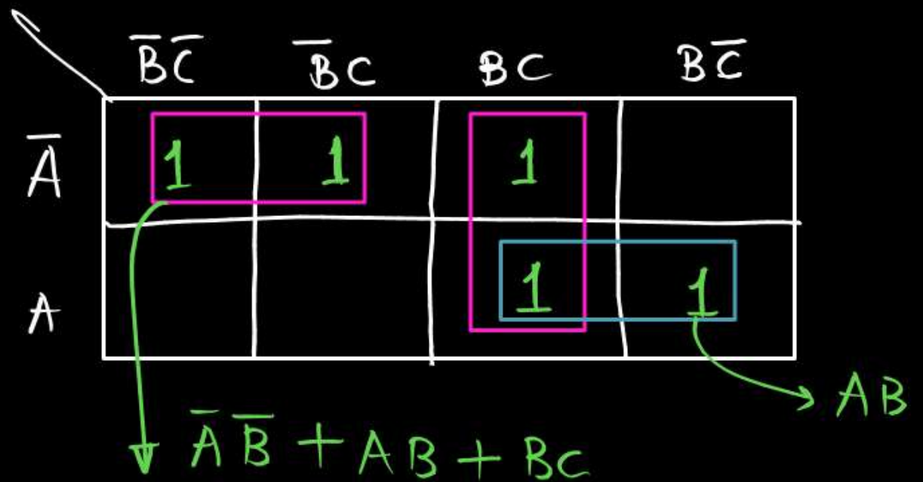
$= \bar{A}\bar{B} + AC + \bar{B}C$

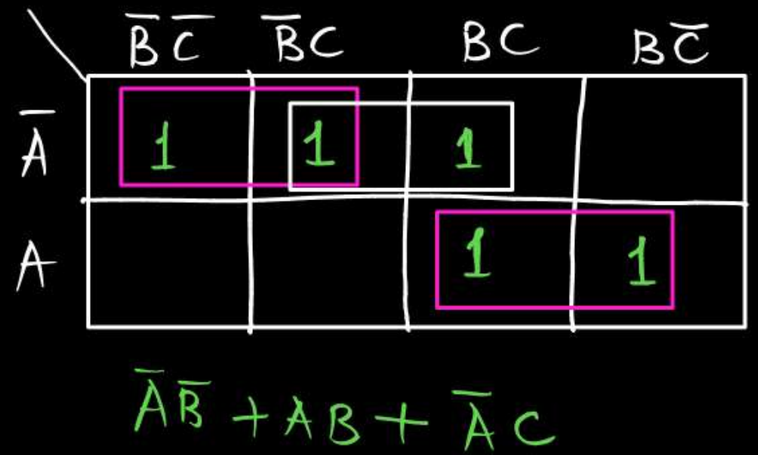
$= \bar{A}B + AC$

redundant

Question

$f(A, B, C) = \Sigma(0, 1, 3, 6, 7)$

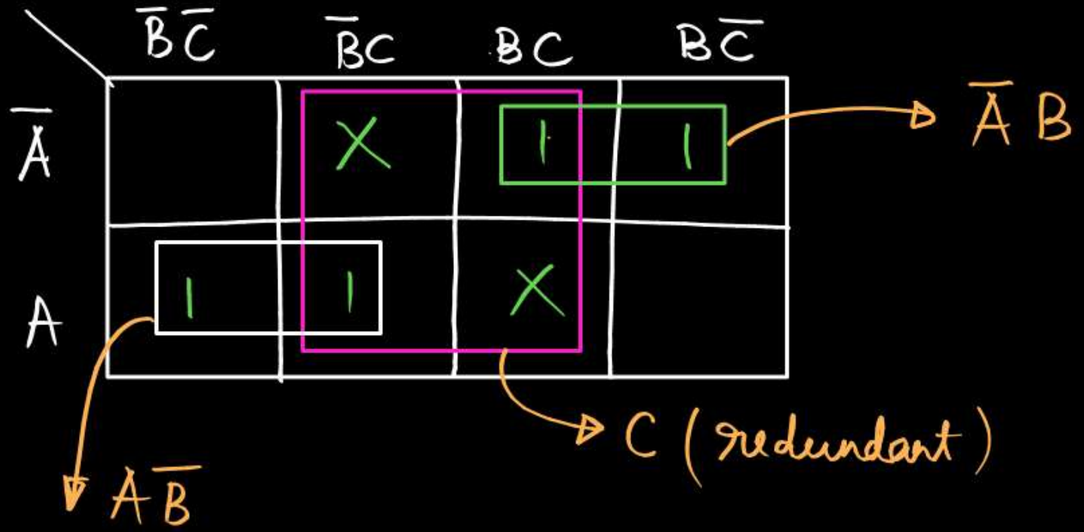




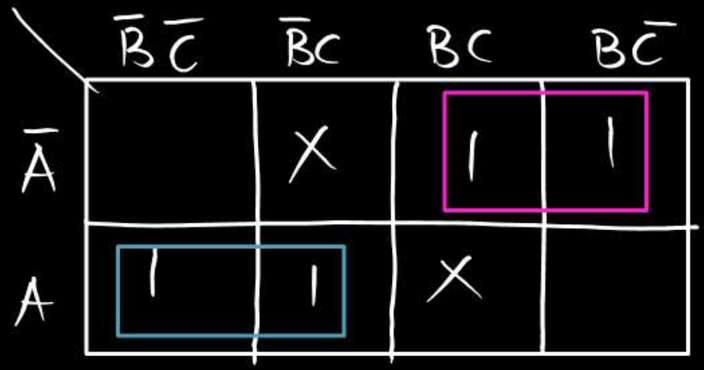
Note: K-Maps can have more one solution but it is not necessary.

Question

$f(A, B, C) = \Sigma(2, 3, 4, 5) + d\Sigma(1, 7)$

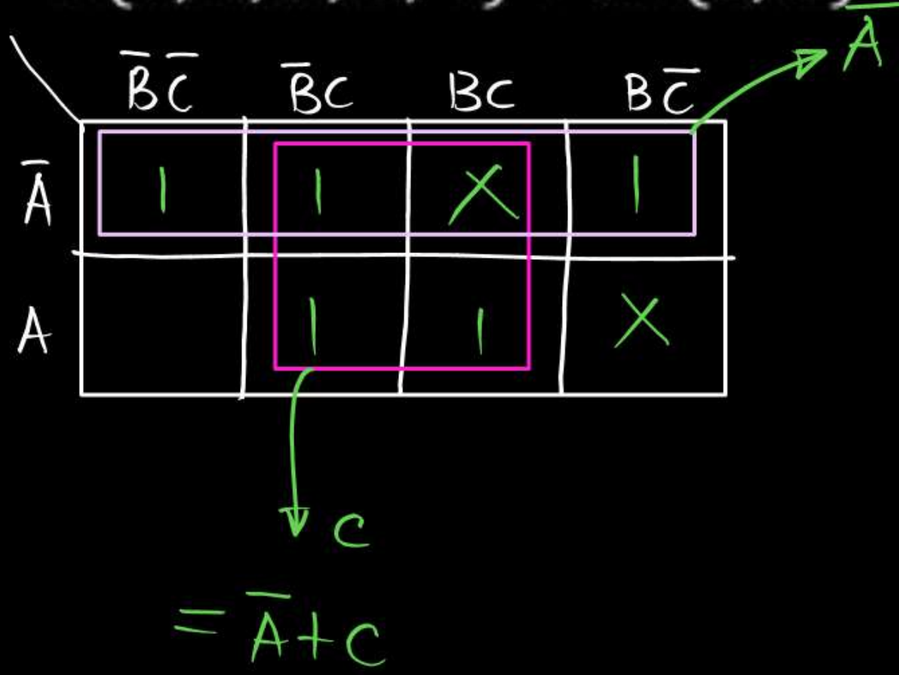


$= A\bar{B} + \bar{A}B$

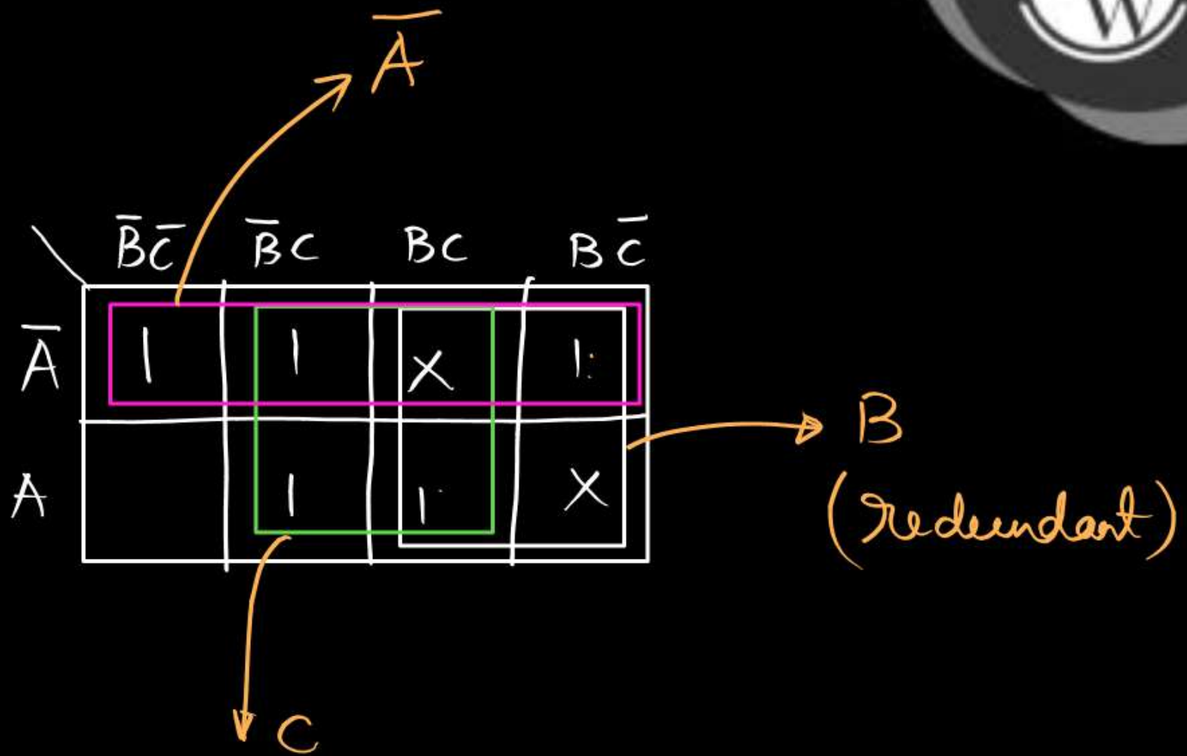


Question

$f(A, B, C) = \Sigma(0, 1, 2, 5, 7) + d\Sigma(3, 6)$

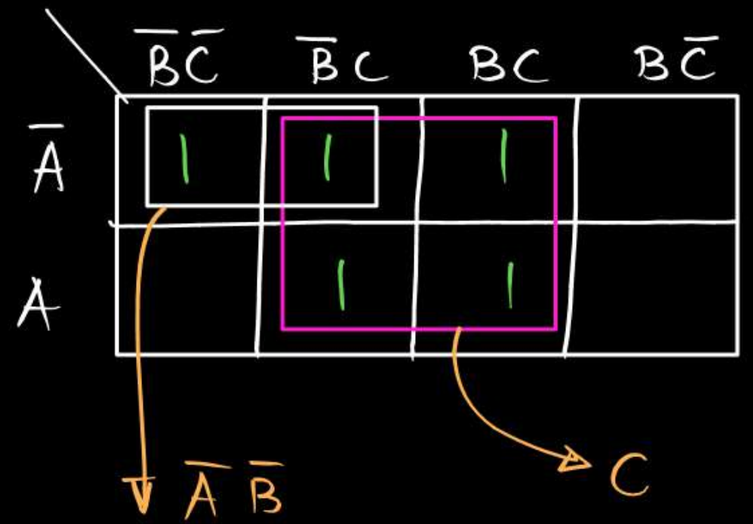


$= \bar{A} + C$



Question

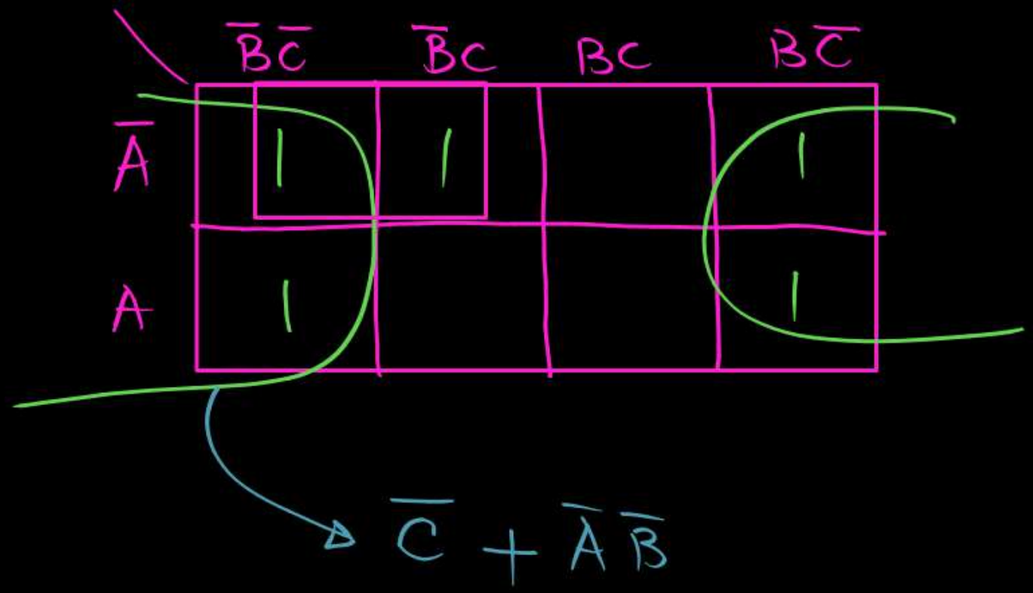
$f(A, B, C) = \Sigma(0, 1, 3, 5, 7)$



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

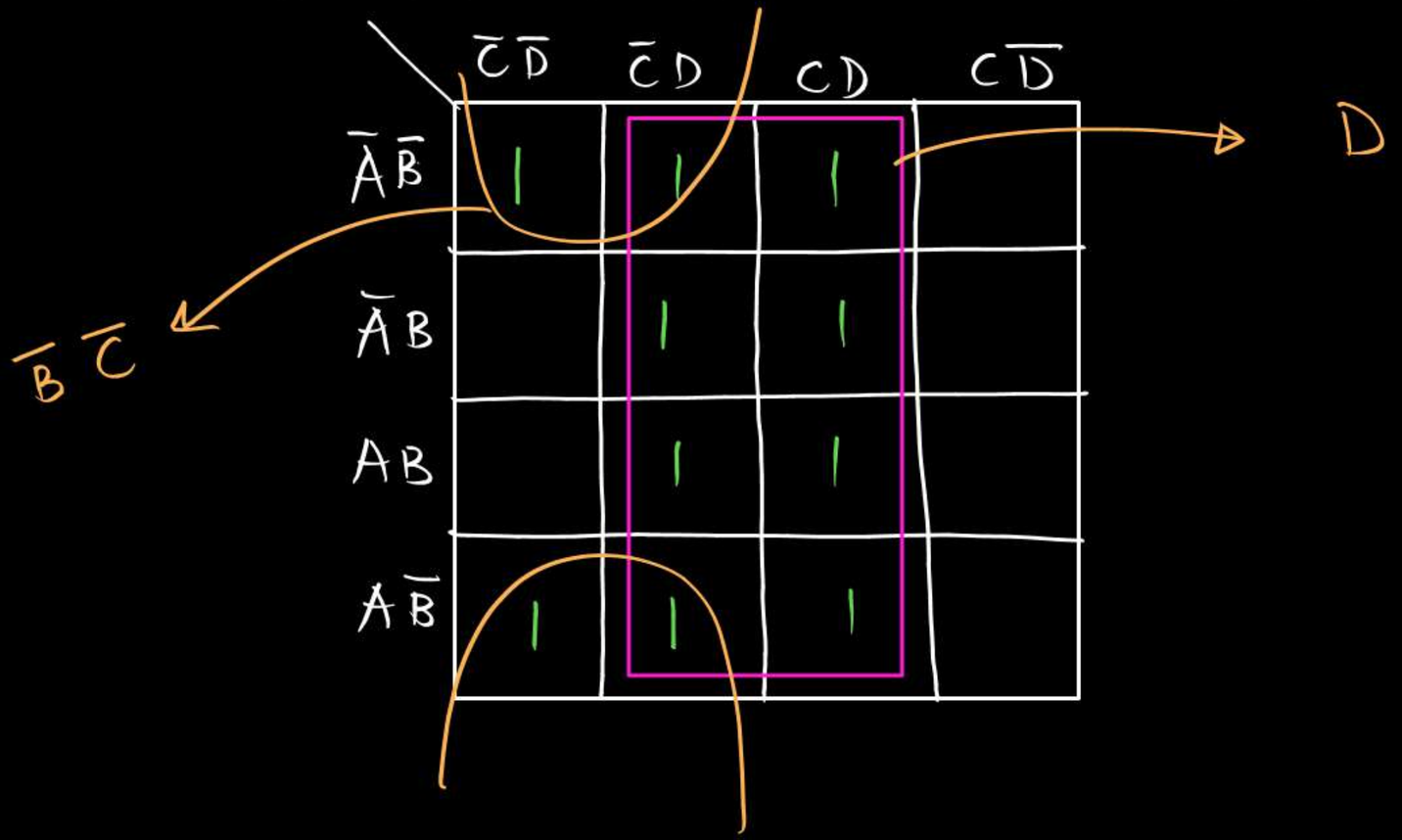
Question

$f(A, B, C) = \Sigma(0, 1, 2, 4, 6)$



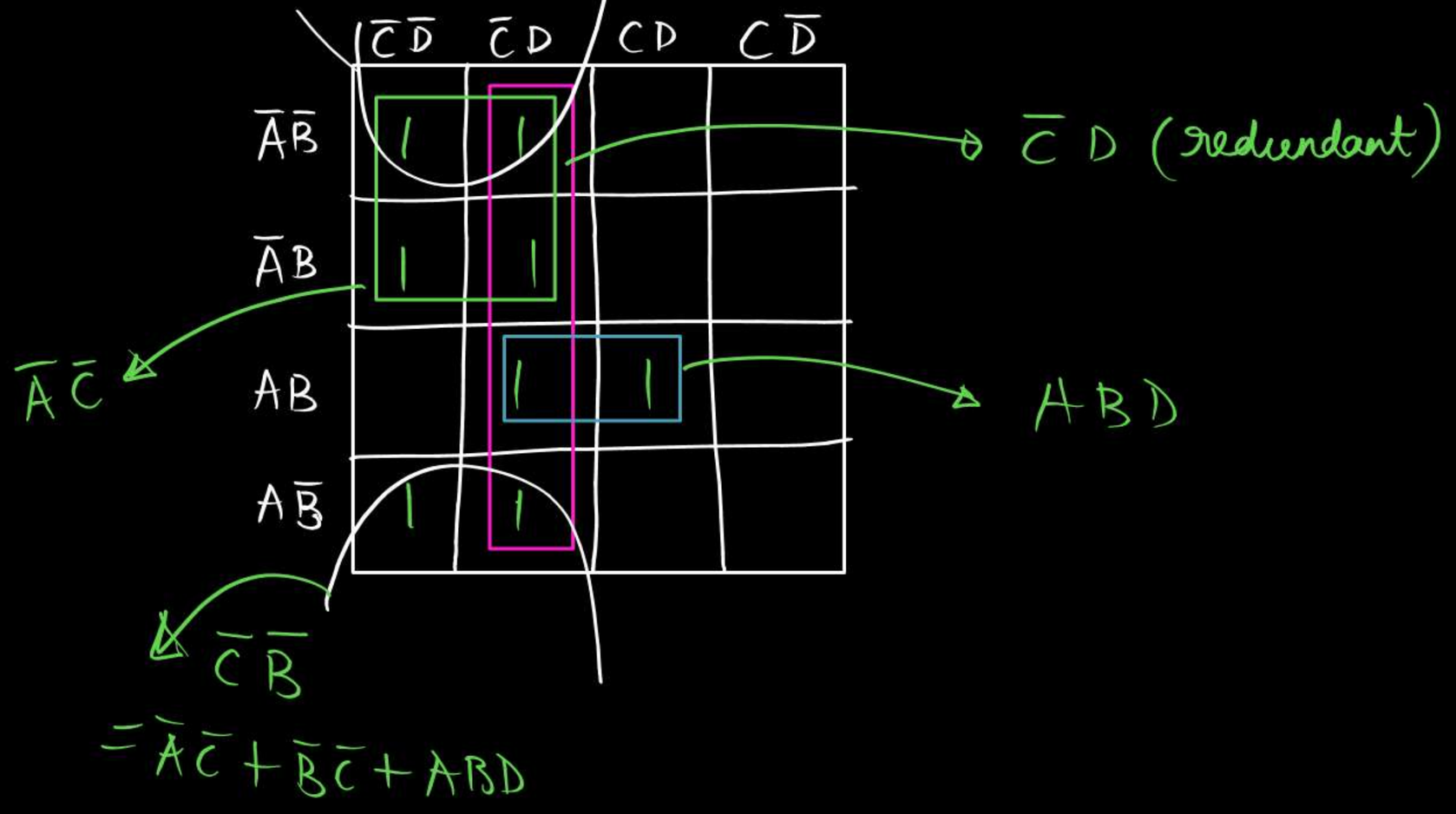
Question

$f(A, B, C, D) = \Sigma(0, 1, 3, 5, 7, 8, 9, 11, 13, 15)$



Question

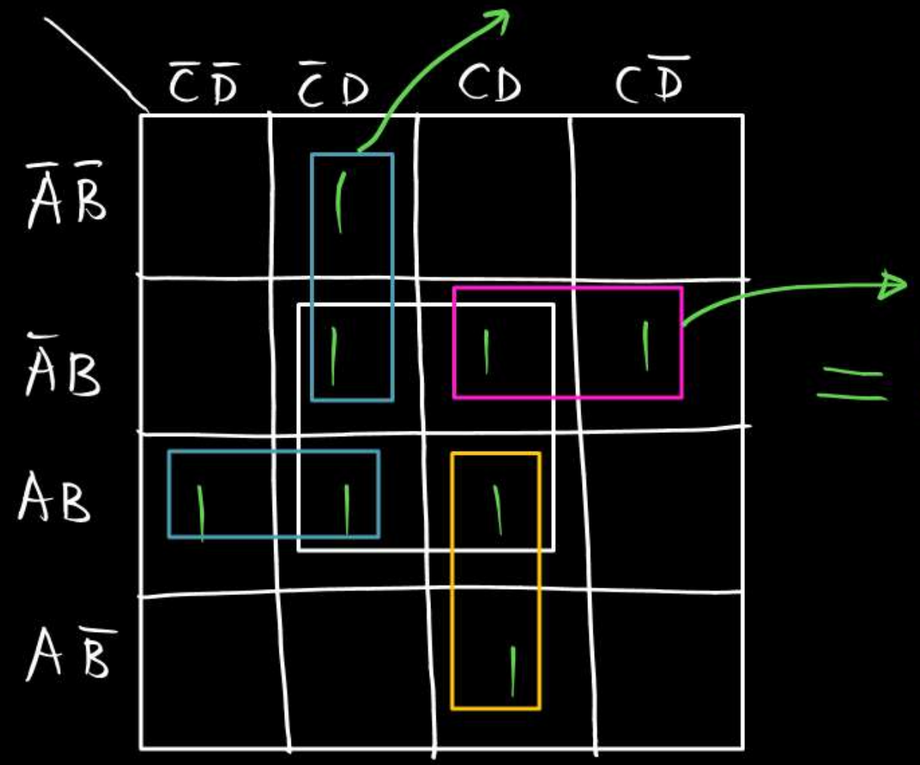
$f(A, B, C, D) = \Sigma(0, 1, 4, 5, 8, 9, 13, 15)$



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

Question

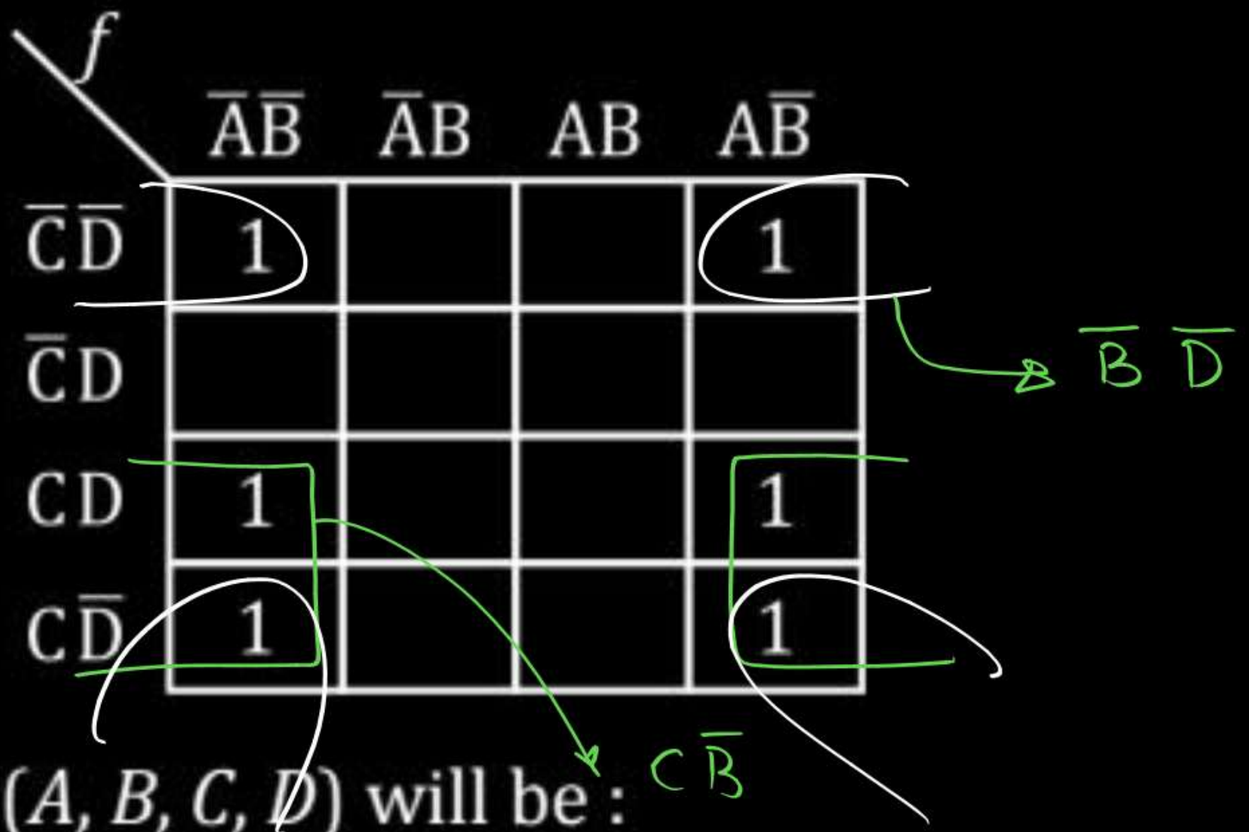
$f(A, B, C, D) = \Sigma(1, 5, 6, 7, 11, 12, 13, 15)$



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

Question

A K-map is given as :



Minimized expression of $f(A, B, C, D)$ will be :

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

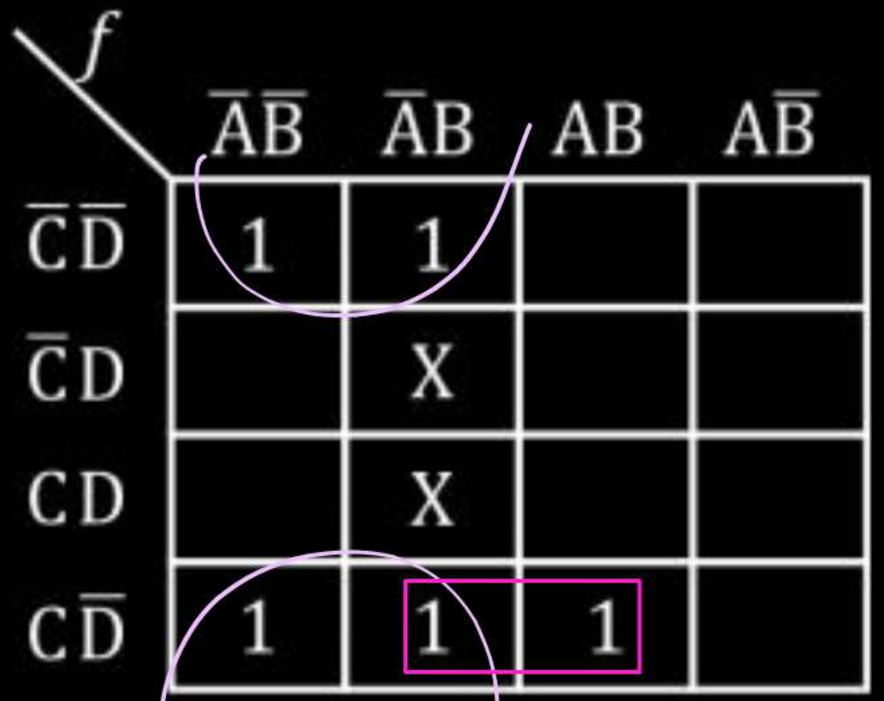
(b) $\bar{A}\bar{B}C + A\bar{B}C + \bar{B}\bar{C}D$

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

(d) None of these

Question

A K-map is given as :



The minimized expression of above K-map is :

(a) $\bar{A}B + \bar{A}\,\bar{D} + BC\bar{D}$

(b) $\bar{A}\,\bar{D} + BC\bar{D}$

(c) $\bar{A}\bar{B}\bar{D} + \bar{A}B + BC\bar{D}$

(d) None of these

Question

A K-map is given as :

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

H.W.

Then which of the following is/are minimized form of above K-map ?

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

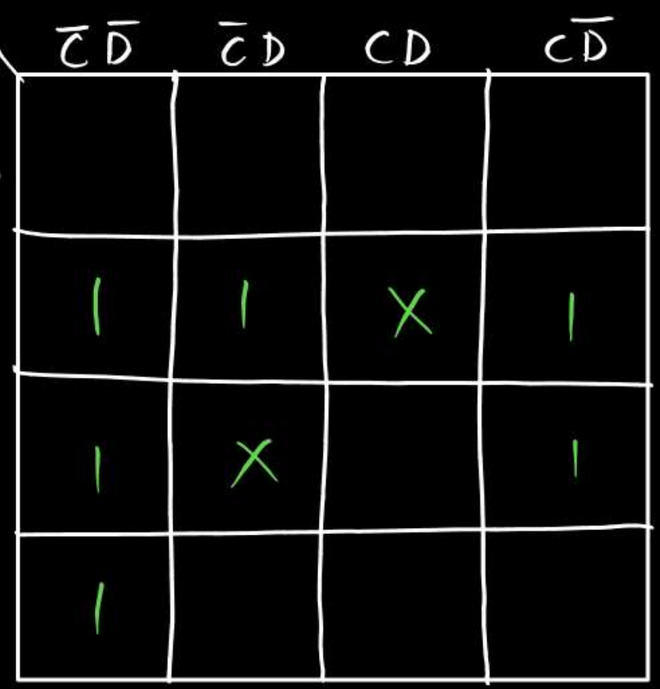
(b) $BD + \bar{A}\,\bar{D} + \bar{B}\bar{D}$

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

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

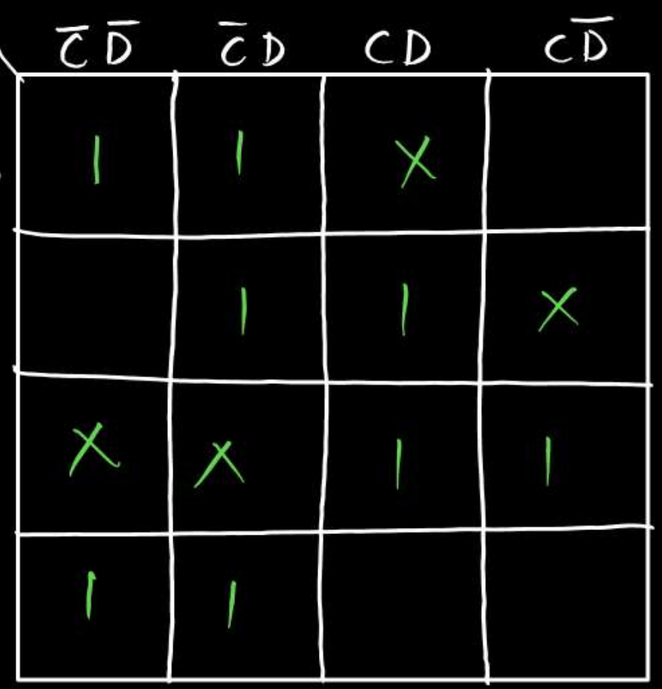
H.W.

Q.1.



H.W.

Q.


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

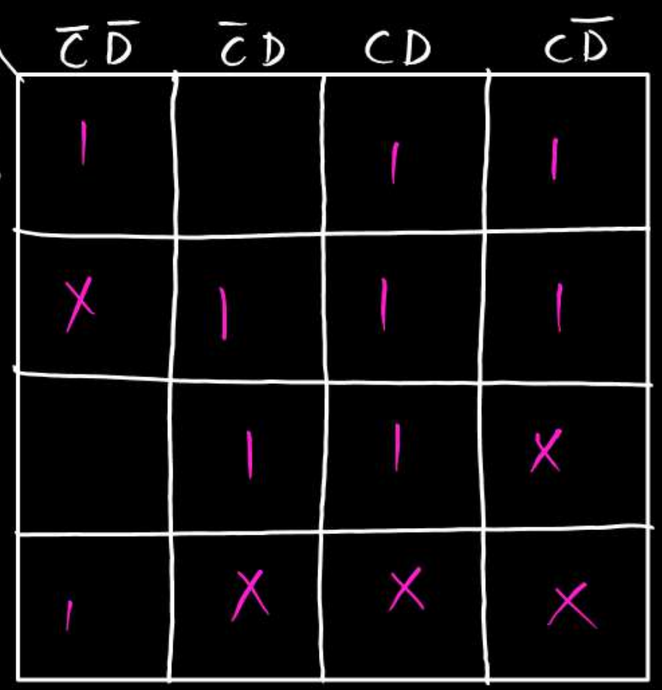
H.W.

Q.

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

H.W.

Q.


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

2 Minute Summary

K-Map Cont

Thank you

GW

Soldiers !