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Roll no:
20P-0153

Section
BSCS 2B

Assignment
DLD

Submitted to:
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FAST NUCES Pwr

Question no # 01:-

$$AC + (A+\overline{B}C)(AC+B)$$

Expression:-

$$AC + (A+\overline{B}C)(AC+B)$$

Firstly:-

Find SOP:

$$AC + (A+\overline{B}C)(AC+B)$$

Domain = {A, B, C} or complement of domain's elements.

Simplification:-

$$AC + (A \cdot AC + A \cdot B) + AC\overline{B}C + B \cdot \overline{B}C$$

Rules:-

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

$AC + AC + AB + A\bar{B}C + 0$

two terms are same write one term from same

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

Conversion:-

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

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

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

2ndly:-

Conversion to Std POS form.

$ACB + A\bar{B}C + AB\bar{C} \therefore F(5,6,7)$

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

Now take whole complents:-

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

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

Std POS form

Date: 20P-0153 Mon Tue Wed Thu Fri Sat

A	B	C	
0	0	0	
0	0	1	
0	1	0	
0	1	1	
1	0	0	
1	0	1	x
1	1	0	x
1	1	1	x

poored from truth table

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

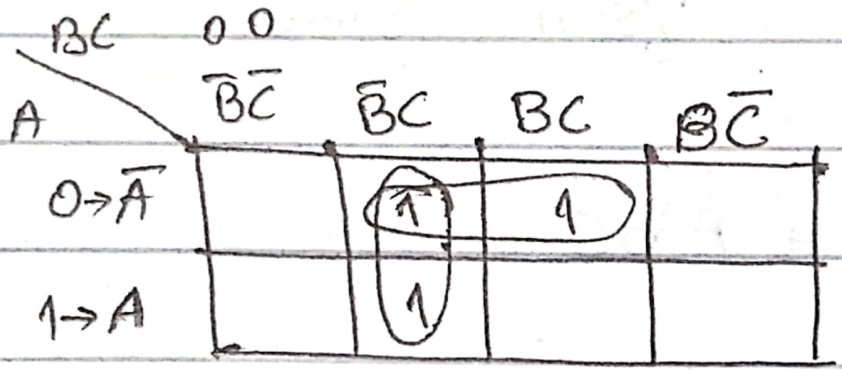
Now in standard POS form

Date / / 20P-0153 Mon Tue Wed Thu Fri S

Question no#2.

SOP:-

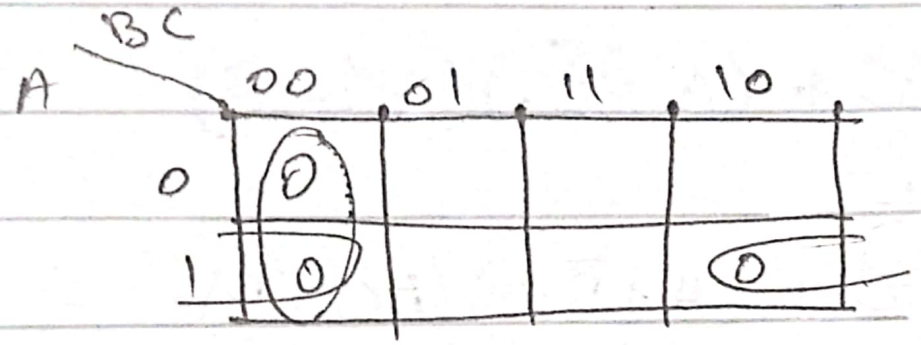
$$\underset{0\ 0\ 1}{\bar{A}\bar{B}C} + \underset{0\ 1\ 1}{\bar{A}BC} + \underset{1\ 0\ 1}{A\bar{B}C}$$



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

POS:-

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



$(B+C)(A+C)$

End