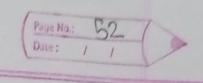


> Properties of X-OR gate:-P-IDA V 11) A FOO = A O=A (III) 1= A DA CVI N) If ADB=C, BDC=A and ADC=B then 199 BO CO VI) ABOAC = A(BE)C) WE KNOW, ADO = AB + AB -0 · A(F) (= A) -> 50, USING EQ (1), A+0 - A.T + A.1

= A. O+ A. T = 0+A = A



## A=O (PA

-> Using eq- ()

A @ 0 = A . O + A . O

= A : 1 + O

0+A=

= A

· A ( A = 0

-> Using eq 0

A.A+A.A = A @A

A=0=A-A 20+0

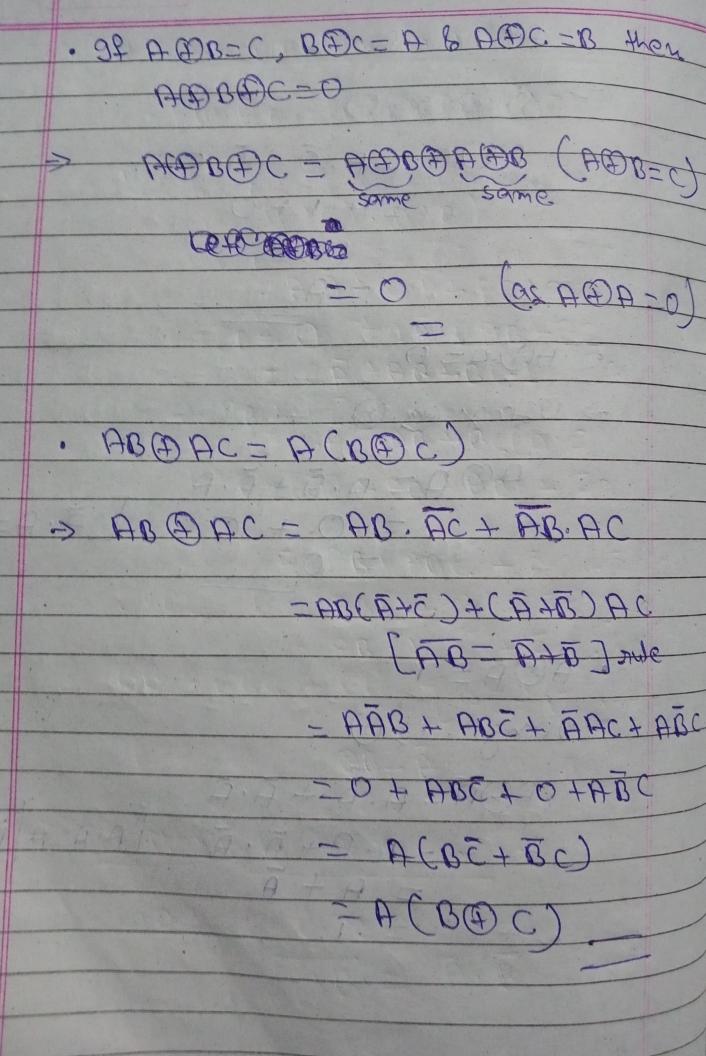
· ADA=1

> Osing eg 1)

AOA = A.A + A.A

[A·A=A A·A=A] - A. A+ A. A

 $= A + \bar{A}$ 



Page No. CII

. Date: / /	
> Boolean algebra:	
-> Complementation lais;-	
· 0 = 1	
· if A=0, then A=1 · if A=1, then A=0	
17 A=1, then A=0	
107 7. 17. 19. 4 2 3 - 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
> Commutative las !-	
7  A+B=B+A	
· A · B = B · A	
-> associative law:	
(A+B)+C=A+(B+C)	
(A.B). C = A(B.C)	
-> Distail butive law:-	
ACB+O= AB+AC	
CARROLLE X / M	

Page No.: SS Date:

-> Toransposition law:

· AB+ AC = (A+C) · (A+B)

Proff.

(8+B). (2+B)

= A.A + C.A + AB+BC

= 0 + CA + AB+BC

= CA + AB + BC-1 [BC=BC-1]

= CA+AB+BC(A+A)

= CA + AB + ABC+ ABC

= AB+ ABC + AC+ ACB

- ABCI+C) + ACCI+B)

- AB. 1 + AC. 1

[140=1,14A=1,140]

= AD+ AC

-> De Mongan's theorem! -

Law 1

A+B = A.B

· Law 2

AB = A+B

-> Consenuous theorems-

· AB+AC+BC=AB+AC

-: 200K9

AB+ AC+BC

= AB+ AC+BC.1

-> Some other important rule for Simplification.

• A. A = O . A + A = 1

1=(A+1) A=A.A. A=A.A.

1=(A+1).

Q. Simplify :-

1) A+[B+ C(AB+ AC)]

>A+ (B+ E (AB · AE)

$$= A + [B + \overline{c}(\overline{A} + \overline{n}) \cdot (\overline{A} + C)]$$

$$= B + [B + \overline{c}(\overline{A} + \overline{A} + \overline{A} + C + \overline{B} + \overline{B} + \overline{C})]$$

$$= B + [B + \overline{c}(\overline{A} + \overline{A} + \overline{C} + \overline{B} + \overline{B} + \overline{C})]$$

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

