EXPERIMENT- 3

Object: -To Verify the Boolean's expressions.

Resources Required:

1. Trainer kit.
2. Patch Chords.

Theory: -

Boolean expressions are

1. Complementation Law: -

The term complement simply means to change 0s to 1s and 1s to 0s.
This is given by
Double complement of A = A" = A

Truth Table:-

S. No.	Input Signal A	Output Signal	Boolean Expression
01	0	0	Y=A"
02	1	1	

2. Commutative Law: -

Commutative Laws allow change in position of AND or OR variables
Law l:- A+B = B+A
Law 2:- A.B = B.A

Truth Table:-

S. No.	Input Signal		A+B	B+A
	A	B		
1	0	0	0	0

2	0	1	1	1
3	1	0	1	1
4	1	1	1	1

3.Associative Law: -

The associative Law allows grouping of variable
Law l:- (A + B) + C = A + (B + C)
Law 2:- (A . B) . C = A . (B . C)

Truth Table:-

SN	Input Signal			(A+B)	(B+C)	A.B	B.C	(A+B) +C	A+(B +C)	(A.B) .C)	A.(B.C)
	A	B	C								
1	0	0	0	0	0	0	0	0	0	0	0
2	0	0	1	0	1	0	0	1	1	0	0
3	0	1	0	1	1	0	0	1	1	0	0
4	0	1	1	1	1	0	1	1	1	0	0
5	1	0	0	1	0	0	0	1	1	0	0
6	1	0	1	1	1	0	0	1	1	0	0
7	1	1	0	1	1	1	0	1	1	0	0
8	1	1	1	1	1	1	1	1	1	1	1

4. Distributive Law: -

The distributive Law allow the factoring and multiplying out of expressions

Law l : A. (B + C) = A B + A C
Law 2 : A + B C = (A + B) (A + C)

Truth Table:-

S. N.	Input Signal			(A+B)	(B+C)	(A+C)	A.B	B.C	A.C	A.(B +C)	AB+AC	(A+B). C	(A+B) . (A+C)
	A	B	C										
1	0	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	1	0	1	1	0	0	0	0	0	0	0
3	0	1	0	1	1	0	0	0	0	0	0	0	0
4	0	1	1	1	1	1	0	1	0	0	0	1	1
5	1	0	0	1	0	1	0	0	0	0	0	1	1
6	1	0	1	1	1	1	0	0	1	1	1	1	1
7	1	1	0	1	1	1	1	0	0	1	1	1	1
8	1	1	1	1	1	1	1	1	1	1	1	1	1

Procedure :

1. Switch on the kit.
2. Give the Input signal as by truth table of concerned law, check output, make observation table and it should match with given output of truth table.

Result: The Booleans Expressions are verified.