Experiment#3

Title:-

Application of logic gates "Implementation of De Morgan's law"

Objective:-

- **DeMorgan's law**
  - $\overline{(A+B)}=\overline{A}.\ \overline{B}$
  - $\overline{(A.B)}=\overline{A}+\overline{B}$

Parts required:-

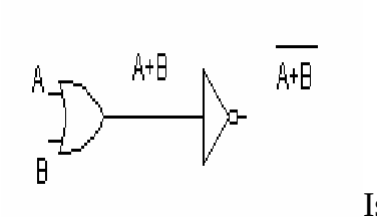
- IC Type 7408 Quadruple 2-input AND gates
- IC Type 7432 Quadruple 2-input OR gates
- IC Type 7404 Quadruple 1-input NOT gates

Equipment required:-

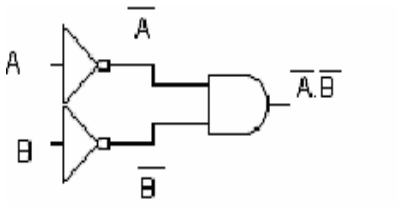
- Trainer/ proto board
- Wire cutter
- Patch Cord
- Voltmeter

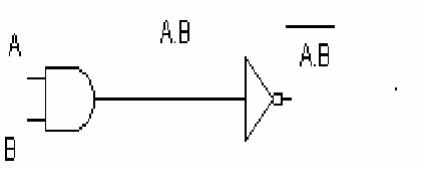
Theory:-

DeMorgan's law

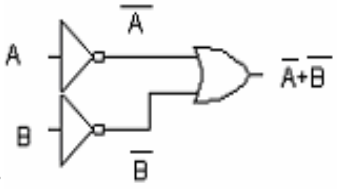


Is equivalent to**:**





Is equivalent to:



Procedure:-

(a) Place the IC of required on the bread board. Be sure that it is seated firmly, straddling the notch in the socket, and that none of the pins are bent
(b) connect Vcc=5V to pin 14 and Ground to pin 7
(c) Pin lay out of the IC is given in Annex connect one of gates. Connect inputs(pin1&2)to SW1 and SW2 and output to the LED
(d) Switch ON the circuit and complete following truth tables

(e)For DeMorgan's law $\overline{A+B} = \overline{A}.\overline{B}$

A	**B**	**A+B**	$\overline{\mathbf{A+B}}$	$\overline{\mathbf{A}}$	B	$\overline{\mathbf{A}}.\overline{\mathbf{B}}$

And $\overline{\mathbf{A.B}} = \overline{\mathbf{A}}+\overline{\mathbf{B}}$

A	**B**	**A.B**	$\overline{\mathbf{A.B}}$	$\overline{\mathbf{A}}$	$\overline{\mathbf{B}}$	$\overline{\mathbf{A}}+\overline{\mathbf{B}}$

Question:- Draw the logic circuit diagrams and describe the connections.