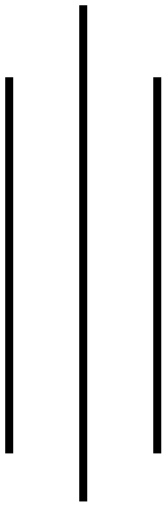
TRIBHUVAN UNIVERSITY

PATAN MULTIPLE CAMPUS

PATAN DHOKA, LALITPUR



DIGITAL LOGIC (BIT 103)

LAB 4

SUBMITTED BY

NAME: SURESH DAHAL

CLASS: BIT – I / I

ROLL NO: 23

DATE: 2080/10/17

SUBMITTED TO

JYOTI PRAKASH CHAUDHARY

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CHECKED BY

TITLE: STATE AND PROVE DE-MORGAN'S THEOREMS WITH TRUTH TABLE AND LOGIC DIAGRAM

1. (X+Y)' = X'. Y'

a) OBJECTIVE

- To practically prove De-Morgan's theorems with logic diagram and truth table.

b) REQUIREMENTS

i. Digital Learning Kit and Simulator
ii. 1 NOR gate, 2 NOT gates, 1 AND gate
iii. Connecting wires
iv. Interactive / Sequence generator as input
v. LED as output

c) THEORY

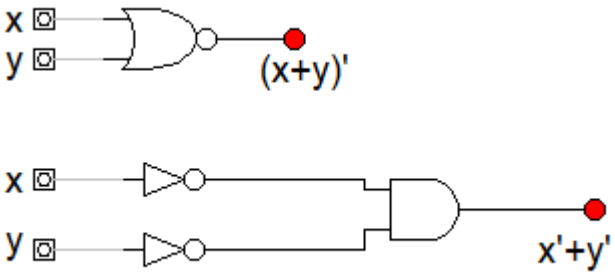
1. INTRODUCTION

De Morgan's theorem states that complementing the result of OR'ing variables together is equivalent to AND'ing the complements of the individual variables.

2. LOGIC EXPRESSION

$$(X+Y)' = X'.Y'$$

3. CIRCUIT DIAGRAM



4. TRUTH TABLE

X	Y	(X+Y)'	X'.Y'
0	0	1	1
0	1	0	0
1	0	0	0
1	1	0	0

d) CONCLUSION

Hence, by doing this practical experiment, we have practically verified that complementing the result of OR'ing variables together is equivalent to AND'ing the complements of the individual variables.

2. (X.Y)' = X' + Y'

a) OBJECTIVES

- To practically prove De-Morgan's theorems with logic diagram and truth table.

b) REQUIREMENTS

i. Digital Learning Kit and Simulator
ii. 1 NAND gate, 2 NOT gates, 1 OR gate
iii. Connecting wires
iv. Interactive / Sequence generator as input
v. LED as output

c) THRORY

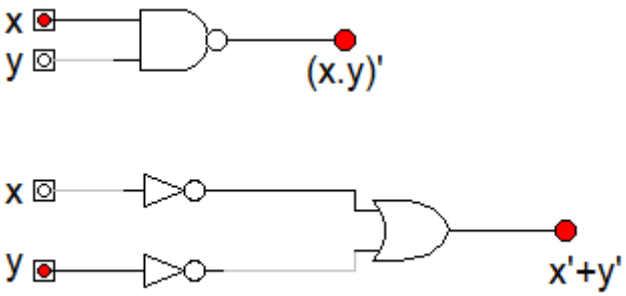
1. INTRODUCTION

De Morgan's theorem states that complementing the result of AND'ing variables together is equivalent to OR'ing the complements of the individual variables.

2. LOGIC EXPRESSION

$$(X.Y)' = X'+Y'$$

3. CIRCUIT DIAGRAM



4. TRUTH TABLE

X	Y	(X+Y)’	X’.Y’
0	0	1	1
0	1	1	1
1	0	1	1
1	1	0	0

d) CONCLUSION

Hence, by doing this practical experiment, we have practically verified that complementing the result of AND'ing variables together is equivalent to OR'ing the complements of the individual variables.