CSE350

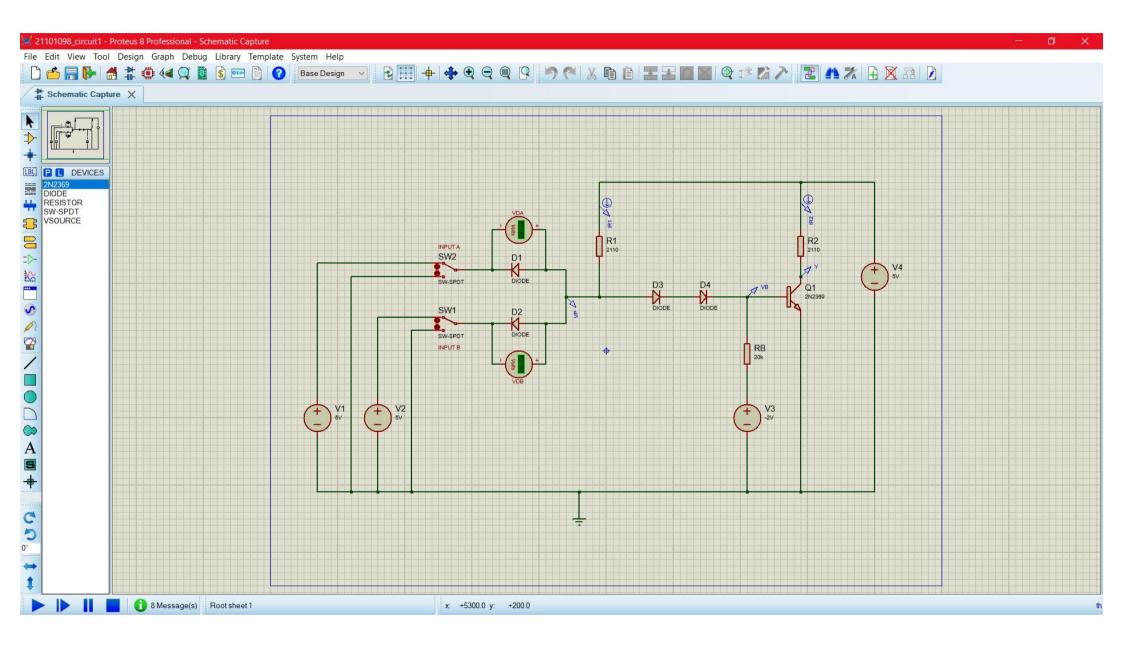
DIGITAL ELECTRONICS AND PULSE TECHNIQUES

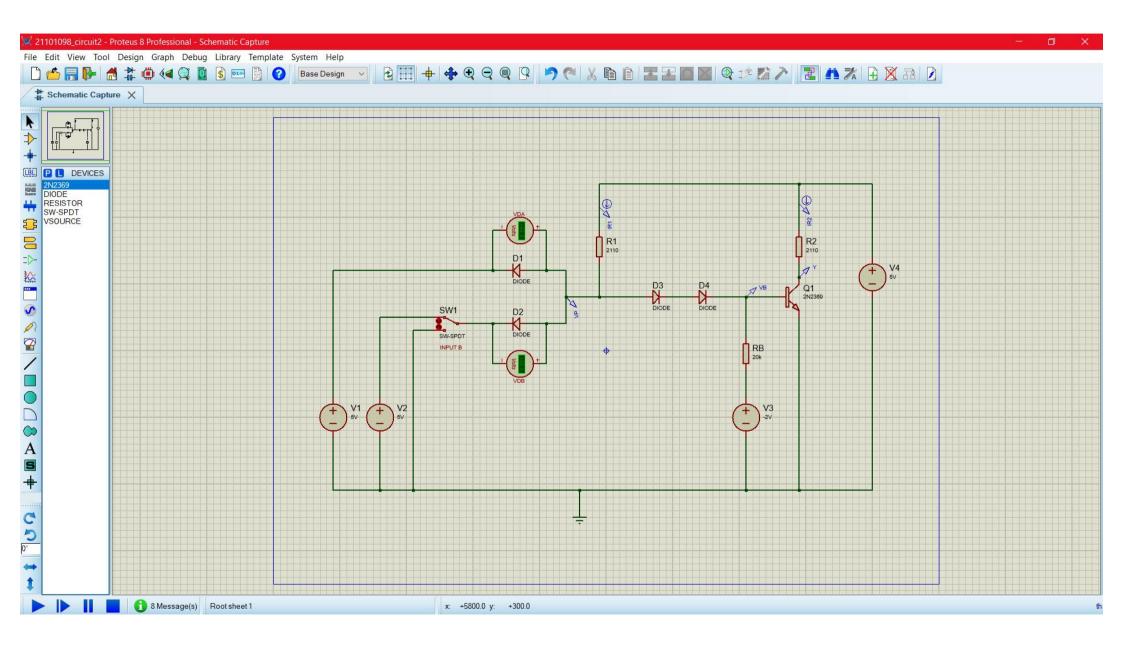
LAB ASSIGNMENT 02

SHAIANE PREMA BAROI

ID: 21101098

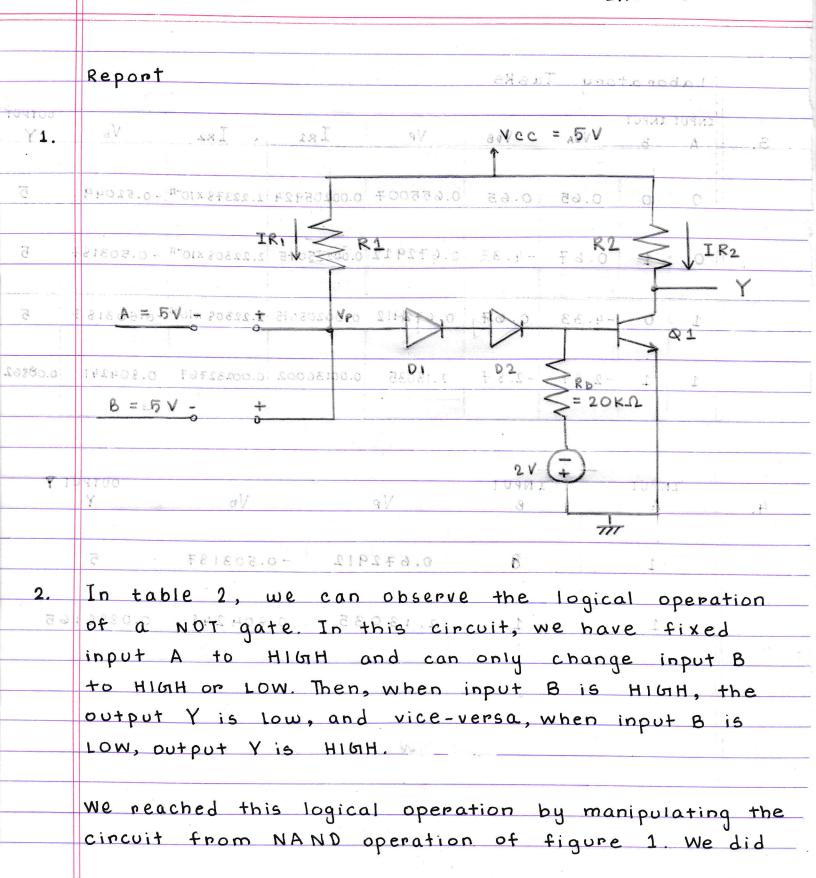
SECTION: 10





| 3. A B VOA VOB VP IR1 IR2 Vb O D 0.65 0.65 0.655007 0.00205924 2.22378×10-11 - 0.52049 O 1 0.67 -4.33 0.672912 0.00205075 2.22308×10-11 - 0.503187 | | | | | "Ye | | | | | |
|--|----------|----------|----------------------|------------------------------|--|---|--|-----------------|-----------|--|
| 3. A B VOA VOB VP IR1 IR2 V6 O D O.65 O.65 O.655007 O.002D5924 2.22378 XIO ^{-II} - O.52049 O 1 O.67 -4.33 O.672912 O.00205075 2.22308 XIO ^{-II} - O.503187 1 O -4.33 O.67 O.672912 O.00205075 2.22308 XIO ^{-II} - O.503187 1 1 -2.87 -2.87 2.13035 O.00136002 O.00232767 O.804241 O.08 INPUT INPUT A B VP Vb Y 1 O O.672912 - O.503187 5 | | Lat | ora | tory | [asks | 2 | | | toogos | |
| 3. A B VOA VOB VP IR1 IR2 V6 O D O.65 O.65 O.655007 O.002D5924 2.22378 XIO ^{-II} - O.52049 O 1 O.67 -4.33 O.672912 O.00205075 2.22308 XIO ^{-II} - O.503187 1 O -4.33 O.67 O.672912 O.00205075 2.22308 XIO ^{-II} - O.503187 1 1 -2.87 -2.87 2.13035 O.00136002 O.00232767 O.804241 O.08 INPUT INPUT A B VP Vb Y 1 O O.672912 - O.503187 5 | . 6 | <u> </u> | | | | | | 1 | | OUTE |
| 3. A B | | INPUT | | | NA. | No | Tot | Tea | Vь | Y |
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| 0 1 0.67 -4.33 0.672912 0.00205075 2.22308×10-11 -0.503187 1 0 -4.33 0.67 0.672912 0.00205075 2.22308×10-11 -0.503187 1 1 -2.87 -2.87 2.13035 0.00136002 0.00232767 0.804241 0.08 4. A B VP Vb Y 1 0 0.672912 -0.503187 5 | - | 0 | n | 0.65 | 0.65 | 0.655007 | 0.00205924 | 2.22378×10-11 | -0.52049 | |
| 1 0 -4.33 0.67 0.672912 0.00205075 2.22309 x10 -0.503187 1 1 -2.87 -2.87 2.13035 0.00136002 0.00232767 0.804241 0.08 1 NPUT INPUT Y 4. A B VP Vb Y 1 0 0.672912 -0.503187 5 2 1 2 1 3 0 3 5 7 0.804 241 0.0886165 | | | | | | | A STATE OF THE STA | | | |
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| 4. A B VP Vb Y 1 0 0.672912 -0.503187 5 2011-0900 1001001 901 019000 000 900 100101 01 01 01 01 01 01 01 01 01 01 | | 1 | 1 | -2.87 | -2.87 | 2.13035 | 0.00136002 | 0.00232761 | 0.804241 | 0.00 |
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| A togal again and and and and an | | | | | | 45 | | | | 15. |
| to High or Low. Then, when input 3 is High, the cotton Y is Low, and vice-versa, when input 8 is | | | 1 | And the second second second | 0 | 0.672 | 912 - 0 | 0.503187 | 5 | |
| to Him er Low. Then, when input 3 is Himt, the output Y is Low, and vice-versa, when input 8 is | noit | 0400 | | اعمنده | | on the second | and the second s | | | ć |
| to Him er Low. Then, when input 8 is HimH, the output Y is lew, and vice-versa, when input 8 is | noit | | io 1 | | 901 | | ne can | , , 2 91 | In tah | 5 |
| ei 8 togal and vice-versa, when loput 8 is | | n y i - | a ! | von 9 | edf w 1 tio: | 2.130 | 35,70. | 804241 | 0.088616 | 5 5 |
| LOW outgot Y is High. We rea | 8 | s x i : | ia ! 2 1 9 | e pace | edt w 1 fio: plac | 2.130 | 35,7 0. | 804241 A | 0.088610 | 5 5 |
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bib ow I sound to noiterage and mont tivoris!



so by setting the values of input Afixed at HIGH In this way, input A acts as if it is OFF and so only input B simply gets inverted.

3. A NAND operation cos consists of an AND gate and a NOT gate combined in the circuit. At first, the inputs go through an AND gate for which we get the following outputs -->

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| | | though | . 0 . | 8 0 | | | |
| 1 | . 1 | 1 | | | | | |

This means that we obtain a logical HIGH value only when both the inputs, A and B are HIGH. When this output goes through the NOT gate, the values get inverted, such that -

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| doid | So, for e | veryald | ogical HIGH; w | e obtai | niastog | ical |
| | LOW, and | vice-ve | rsa. Together, | thesar | VD gate | V |
| | and NOT | gate o | operates to be | a NAN | D gate | |
| | | | TOGTOO | 8 | - A | 1000 |
| | A | В | output | | \$ | |
| | and the state of t | | - 0 | . 0 | . 0 | |
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| | D | 1 | 1 | | | |
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| | 9 | | | 8 8 9 0 | | 8 |

4. When one of the inputs is HIGH and the other one is LOW, Q1 wor operates in the CUT-OFF State.

CUT-OFF IB, Ic, IE = 0

VBE < 0.5 V

IB = -2.84667 × 10-12 A № 0 A

Ic = 1.72308 × 10-11 A 2 0 A

IE = 5.39052 × 10-12 A = 0A

[PROVED]

Ve = -0.503187 V

VE = OV

.. V8E = V6 - VE

= -0.503187 -0

= -0.503187 V < 0.5V

[PROVED]

5. The maximum value of inputs A, B to keep the output HIGH are-

VA = 1.2 V

VB = 1.2 V