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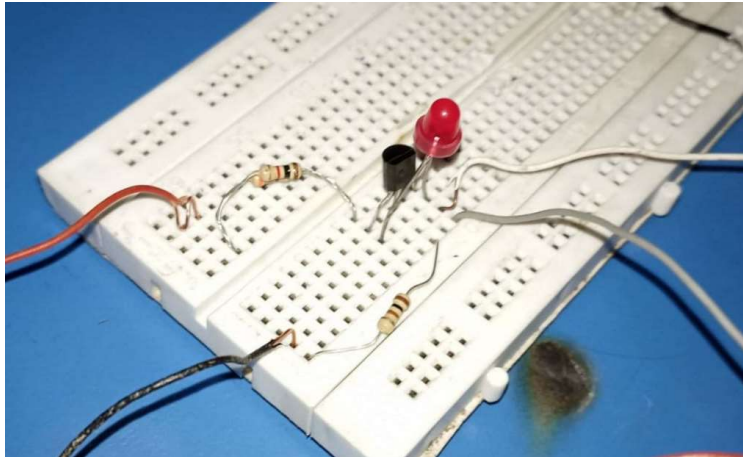
EE-272L Digital Systems Design

Reg. No.: 2021-EE-052

Marks Obtained: _____

Lab Manual 1

Introduction to MOSFET as Inverter



PART A

Question 1

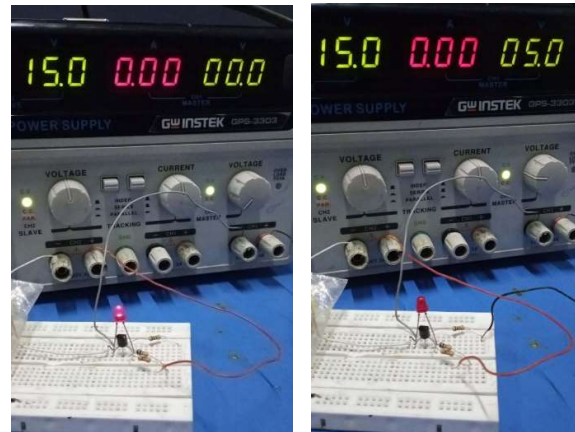
When 5V is applied at A, voltage at terminal B is 0V. The LED doesn't glow.

Question 2

When 0V is applied at A, voltage at terminal B is 0.5V. The LED doesn't glow.

The resistor between V_{DD} and terminal B was changed from 1K to 250 ohm.

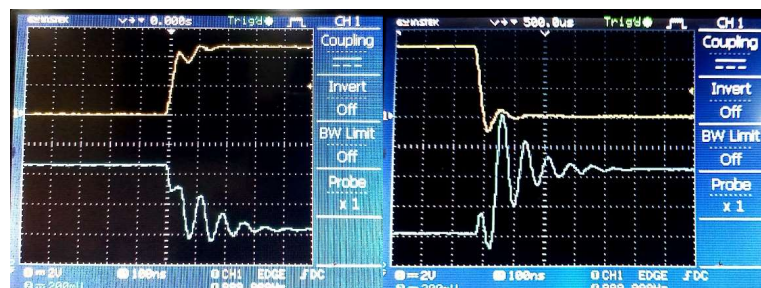
Voltage at terminal B is 2.6V. The LED glowed.



Question 3

Time taken for output to go from low to high voltage = 450ns

Time taken for output to go from high to low voltage = 400ns



Question 4

Time taken for output to go from low to high voltage = 250ns

Time taken for output to go from high to low voltage = 225ns



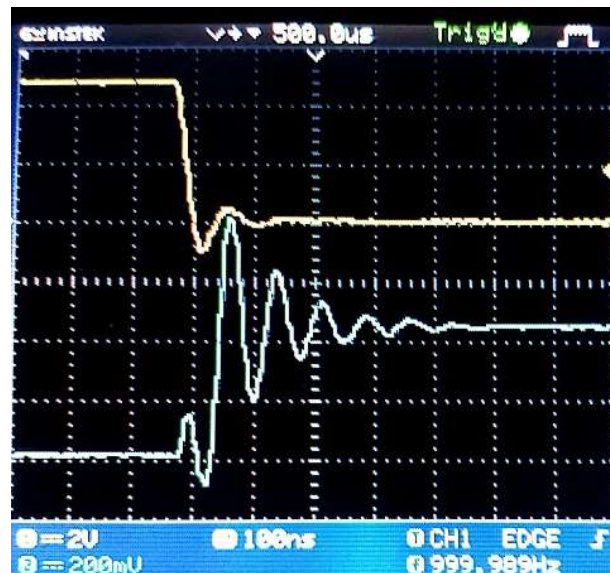
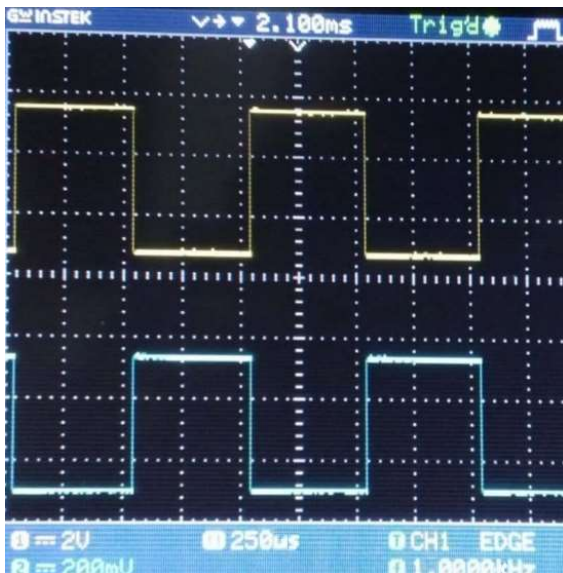
Question 5

As frequency increase, propagation delay decreases.

While the frequency increased 100 times, the decrease in propagation delay was of $\frac{450}{250} = 1.8$ times.

Thus it stays in the linear mode of operation for longer and stays in the saturation mode for lesser time.

PART B



Input wave(Yellow) and output wave(Blue) of an inverter circuit