# CSE350

# DIGITAL ELECTRONICS AND PULSE TECHNIQUES

**Lab- 05**


**Name: MD. Abdul Kahhar Siddiki Shan**

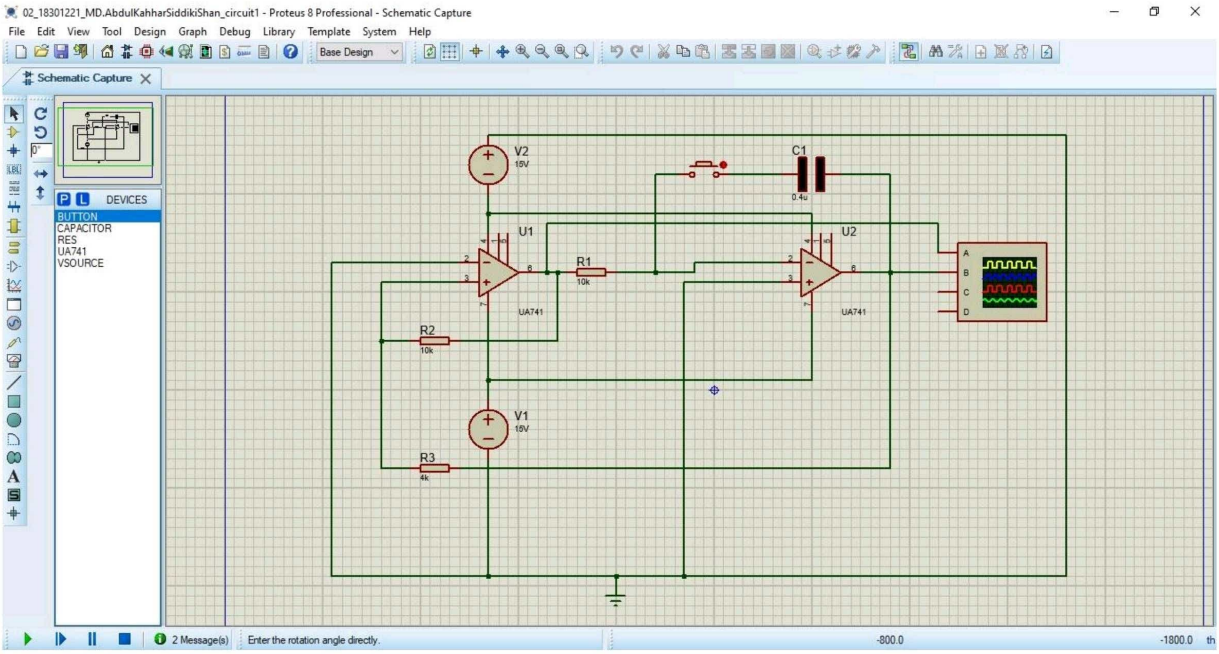
**ID: 18301221**

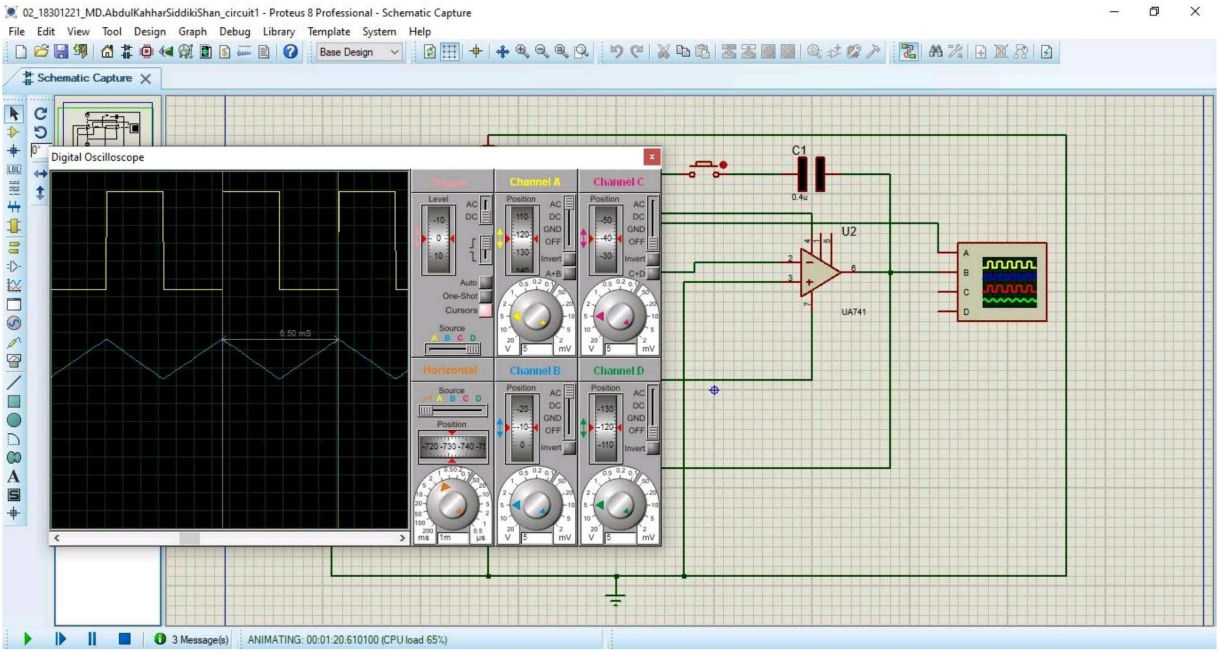
**Section- 02**

**Date of Submission- 23 August,2021**

18301221

## Circuit:



Frequency of oscillation:

Frequency $f = (1/4 * R_1 * C) * (R_2/R_3)$

$= (1/4 * 10\times10^3 \times 0.4\times10^{-6}) * \left(\frac{10\times10^3}{4\times10^3}\right)$

$= 156.25$ Hz

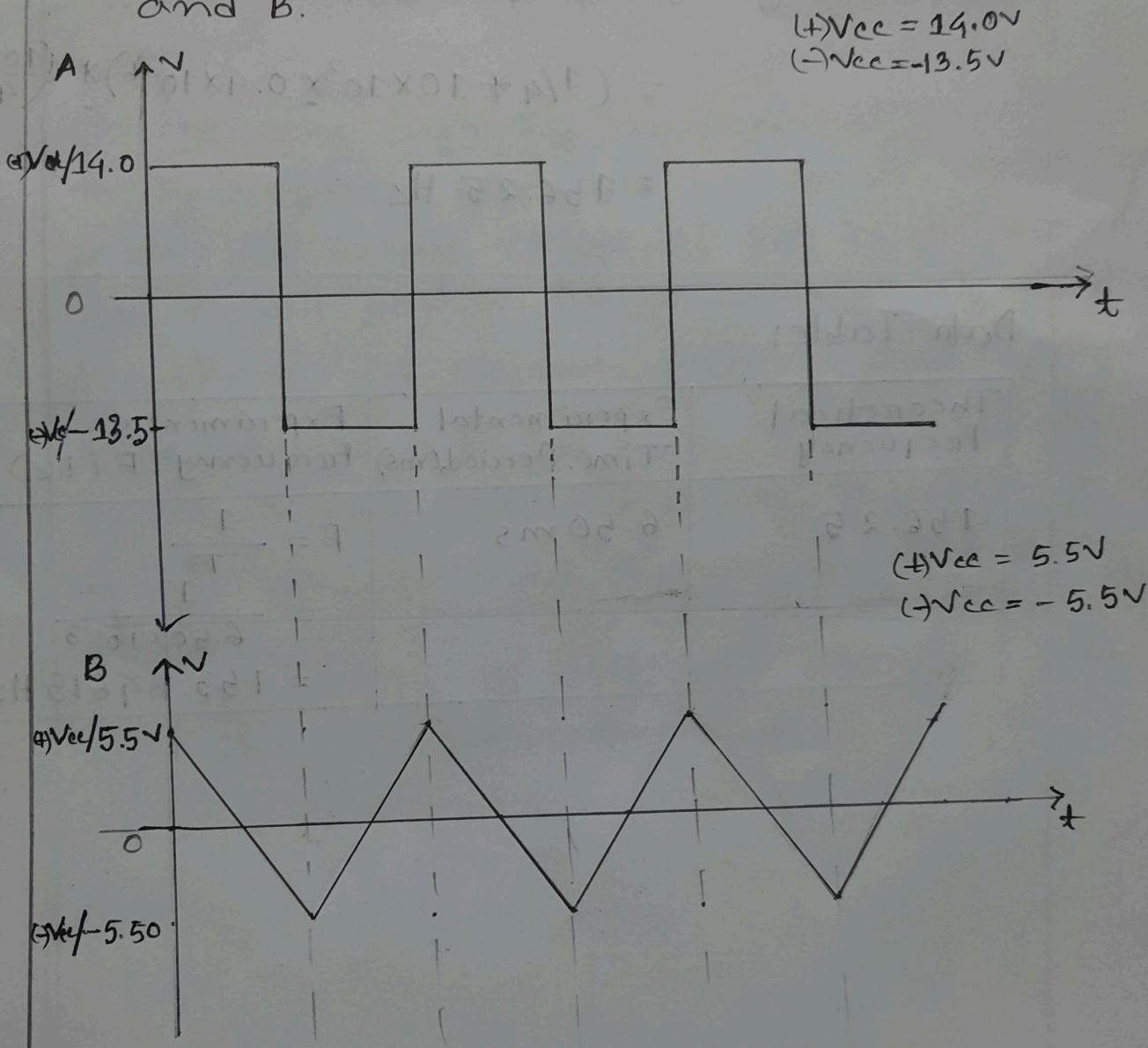
Data Table:

| Theoretical Frequency | Experimental Time, Period, (ms) | Experimental Frequency, F (Hz) |
|---|---|---|
| 156.25 | 6.50 ms | $F = \frac{1}{T}$ <br> $= \frac{1}{6.50\times10^{-3}}$ <br> $= 153.84615$ Hz |

18301224

Report:

1. Draw the output wave shapes at point A and B.



18301221

2. Provide adequate explanations about the circuit operations?

→ Here, IC1 is the Schmit circuit and IC2 is the integration circuit. Firstly, A in saturation mode and current flows towards the capacitor C through R1 register where charge stores in capacitor. A becomes positive and output of IC2 (B) falls gradually. When B goes down, C will also go down. When the value of C below 0, A becomes negative. As a result, the current will flow reversely and it will flow towards A through R1. The voltage of B will rise gradually. After that, when C exceeds 0V, the output of point A of the Schmit circuit changes to positive rapidly in saturation mode. By repeating this changes we get square wave at point A and triangular waveform at point B.

3. Can the integrator circuit be implemented with an inductor? If so, show analytical calculation about how an integrator circuit performs with an inductor instead of a capacitor.

→ The integrator circuit can not be implemented with an inductor. Inductor provides strength to the magnetic field to increase inductance. Furthermore, inductor stores the energy in the form of magnetic field. On the other hand, capacitor stores the energy in the form of an electric field. So, we can not use inductor instead of capacitor.