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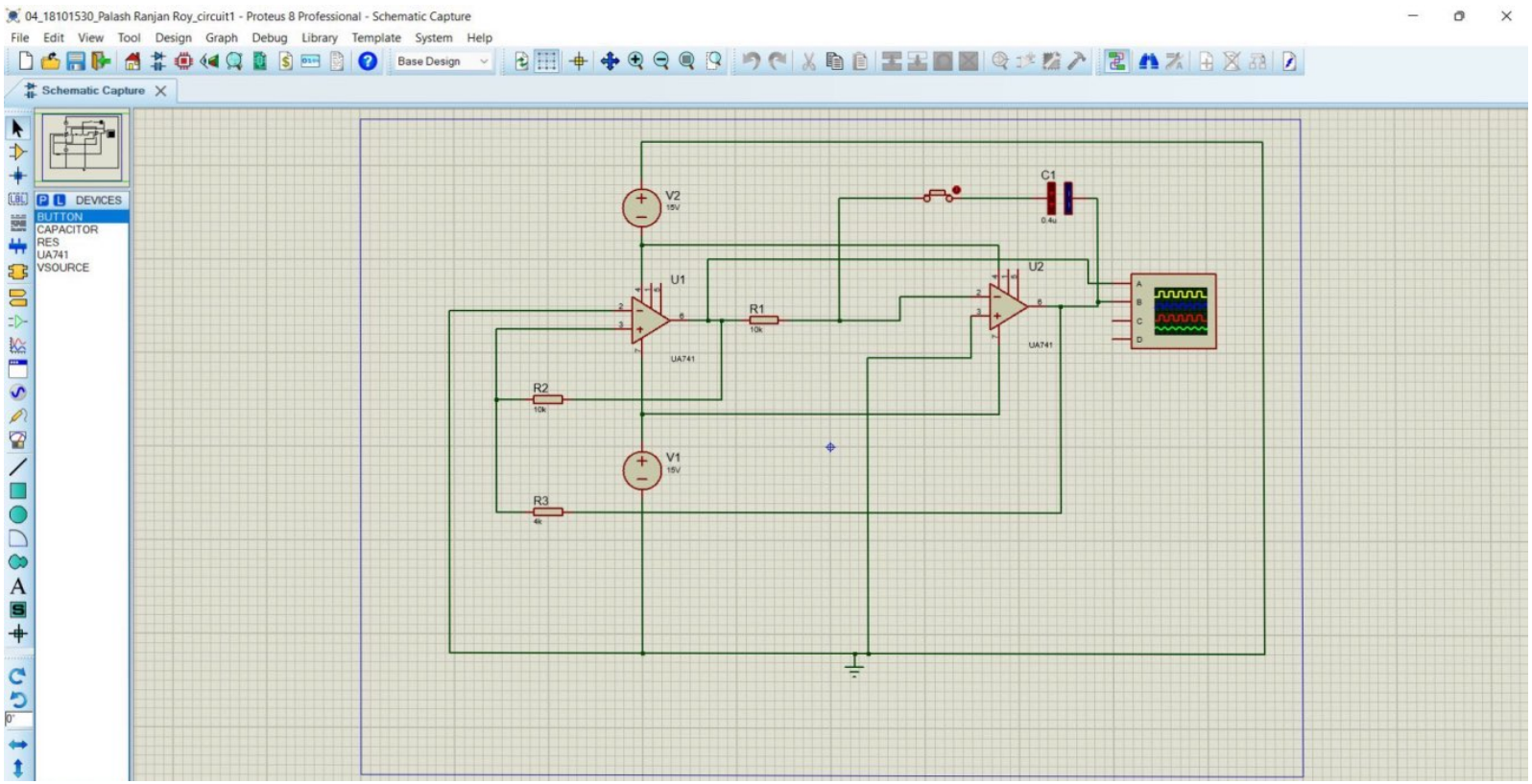
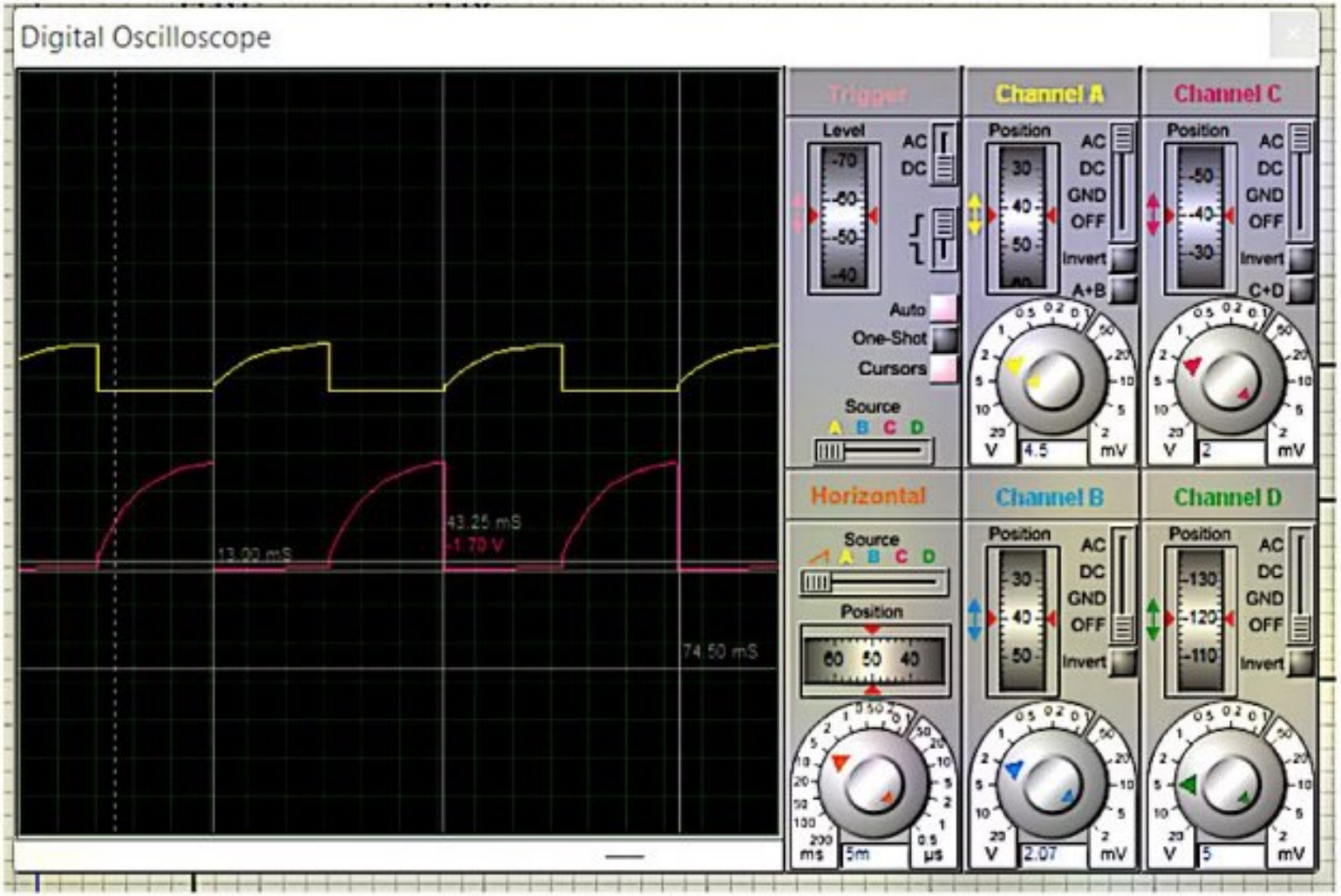
Sec- 04

Lab 06





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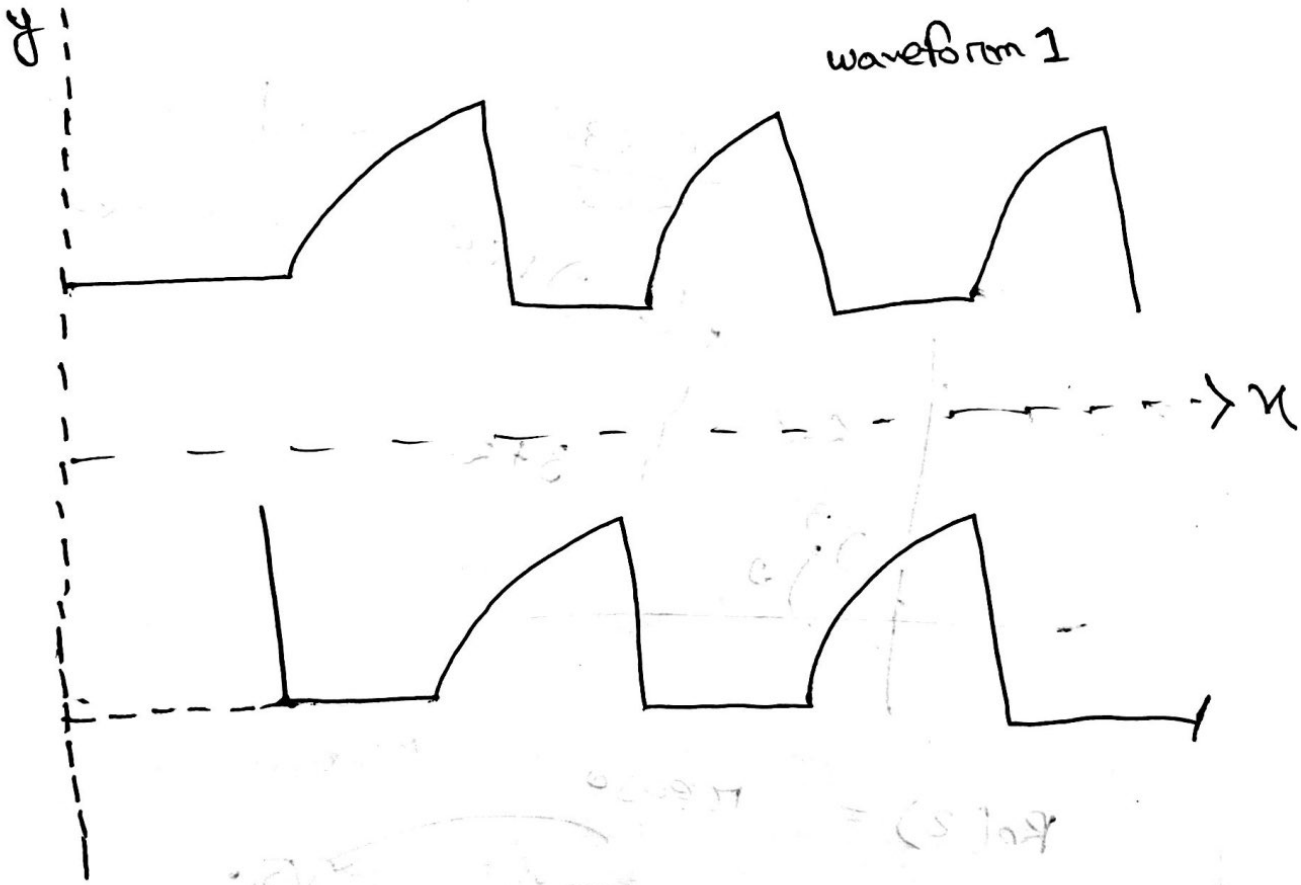
Report:

1. The output waveforms achieved ~~form~~ from proteus simulation:



2. There is sigt deviation in the experimental output wave shape from the desired wave. In real life there is some system loss and the capacitor take some time to charge and discharge. There is also internal hidden resistance. That is why time period increased by $T = RC$

3. $R_1 = R_4 = 1\ K\Omega$; $R_2 = R_3 = 4.7\ K\Omega$

$C_1 = C_2 = 4.7\ \mu F$

Theoretical calculation:

$$t_1 = 0.69 \times C_1 R_3$$

$$= 0.69 \times (4.7 \times 10^{-6}) \times (4.7 \times 10^{3})$$

$$= 0.01524215$$

$$t_2 = 0.69 \times C_2 R_2$$

$$= 0.69 \times 4.7 \times 10^{-6} \times 4.7 \times 10^{3}$$

$$= 0.01524215$$

Total period, $T = t_1 + t_2$

$= 30.4842\ ms$.

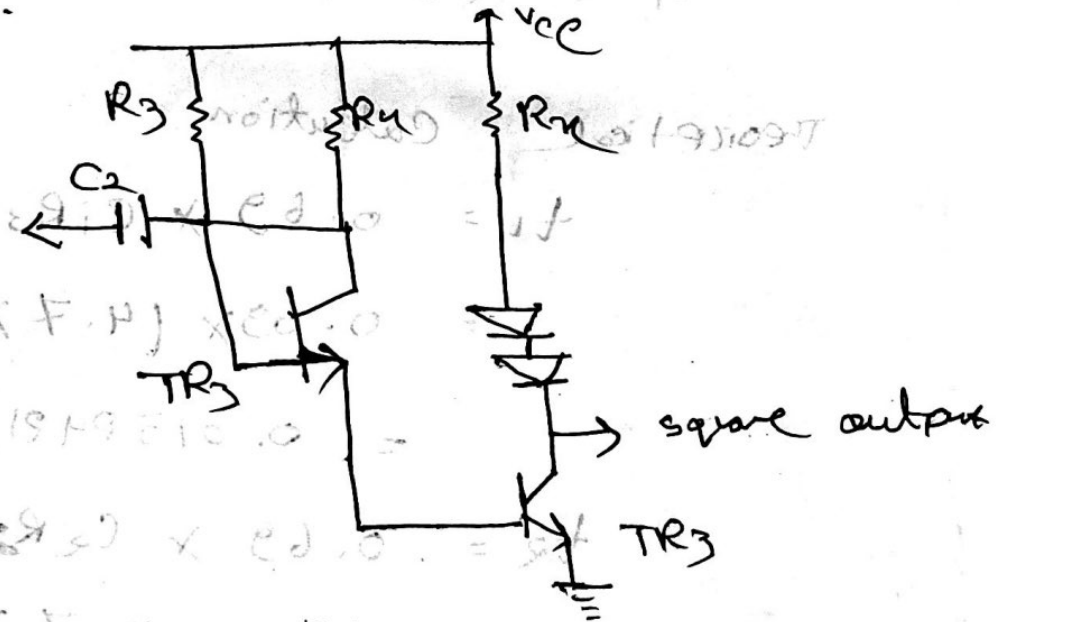
From simulation

$$T = T_2 - T_1 = (43.25 - 13.00)$$

$$= 30.25 \text{ ms}$$

The experimental value and the theoritical value is quite similar. The differences is, $= (30.48 - 30.25) = 0.23$ ms which is negligible

4. It is possible to use the multivibrator to create variable frequency square wave generator.



Here, TR_2 and TR_3 is dependent on each other. So, when TR_2 is off TR_3 will be turned off as well. On the other hand, when TR_2 is on TR_3 will turned

5. In astable multivibrator a variable resistor can be used to regulate the duty cycle of the circuit

duty cycle = $(R1 + R2) / (R1 \times LR2)$

A variable resistor is used to adjust the duty cycle of the PWM produced by the PWM generator. So here of we change R1 and R2's values the goal can be achieved.