INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)
Dundigal, Hyderabad - 500 043

LABORATORY WORK SHEET

Date: 07-06-22

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Exp No: 11 Experiment Name: UJT

DAY TO DAY EVALUATION:

	Preparation	Algorithm / Performance in the Lab	Source Code / Calculations and Graphs	Program Execution / Results and Error Analysis	Viva	Total
Max. Marks	4	4	4	4	4	20
Obtained	3	3	4	4	4	18

Signature of Lab I/C

START WRITING FROM HERE:

Aim:- To obtain a sawtooth waveform using UJT and test its performance as an oscillator.

Apparatus Required:-

1. Resistor
2. capacitor
3. UJT
4. bread board
5. DC voltage
6. connecting wires

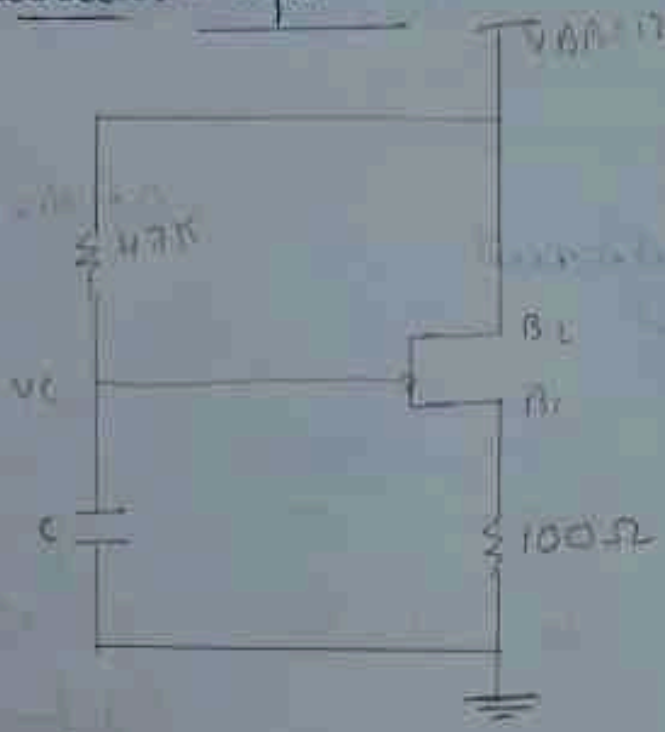
Software Required:-

waveform application

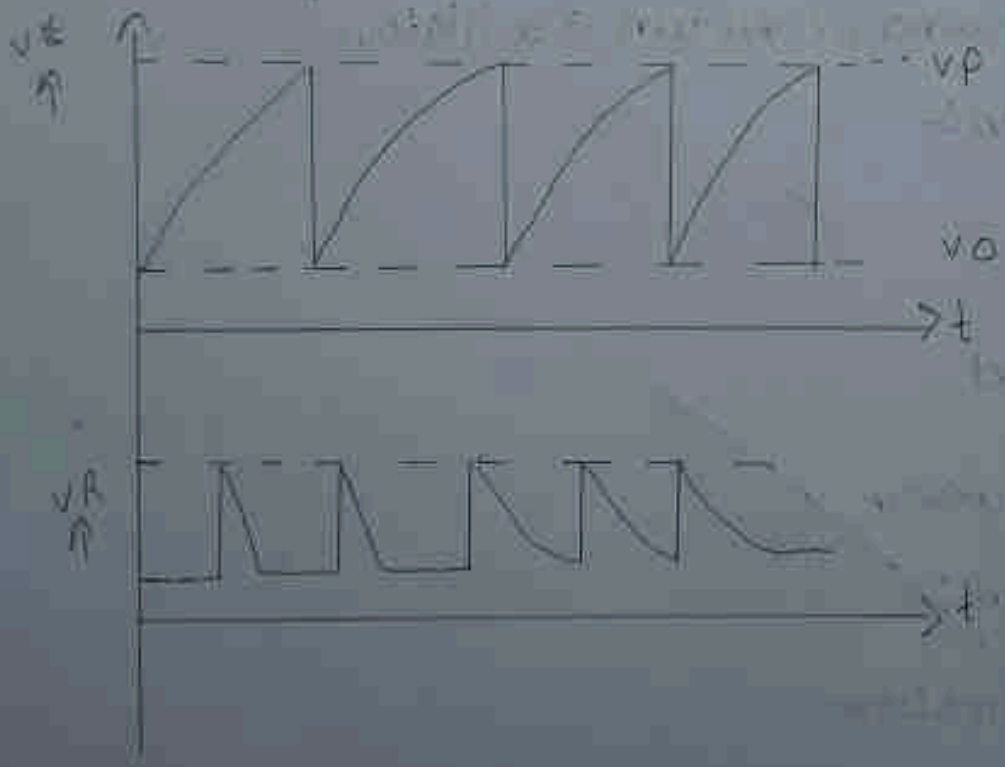
procedure

1. connections are made as per the circuit diagram
2. The output Vo is noted time period is also noted
3. The theoritical time period should be calculated

Circuit Diagram



Expected waveform



$T = R_T C_T \ln\left(\frac{1}{1-\eta}\right)$

5. The output at base 1 & base 2 should be noted

6. Graph is to be plotted and waveform can be drawn for V_a, V_b, V_{B1}.

Observation Table:

Parameter	Emitter	Base
V_{max} (volts)	8.839	6.203
V_{min} (volts)	2.02	167.14m
T (msec)	3.55	3.55

calculations

Intrinsic stand off ratio

$$\eta = \frac{V_p - V_D}{V_{BB}} = \frac{8.839 - 0.7}{12}$$

$$\eta = 0.67$$

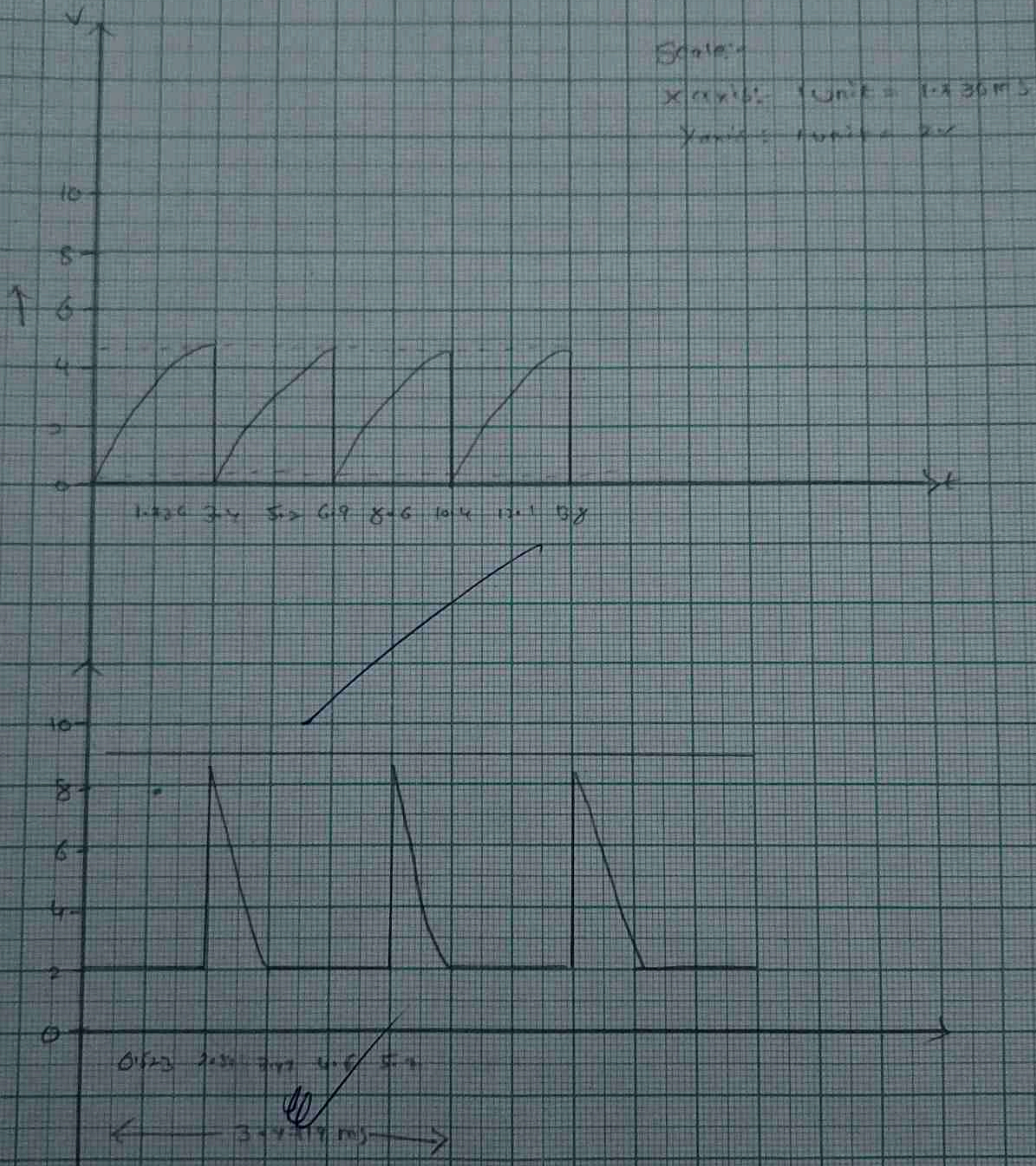
Time period:-

$$T = RL \ln\left(\frac{1}{1-\eta}\right) = 47 \times 10^3 \times 0.1 \times 10^{-6} \ln\left(\frac{1}{1-0.6}\right)$$

$$T = 5.21 \text{ msec}$$

Result

Hence observed the characteristics of UJT & plotted wave forms.


Scale:-
X axis:- 1 unit = 1.730 ms
Y axis:- 1 unit = 2 V
V
10
8
6
4
2
0
t
1.730
3.4
5.2
6.9
8.6
10.4
12.1
13.8
10
8
6
4
2
0
0.523
2.30
3.47
4.6
5.4
3.47 ms