EXP NO: 2
21/8/25

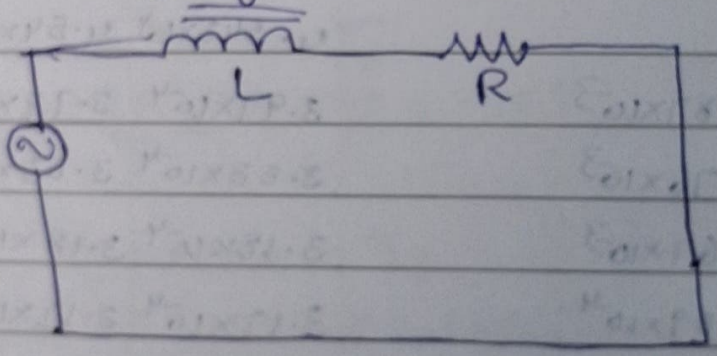
Analysis of first order R-L & R-C circuits

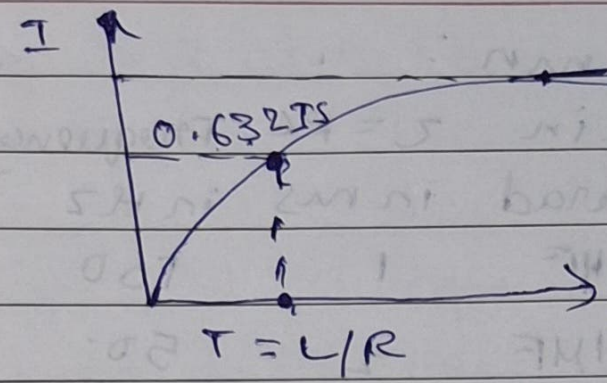
Aim: To study the response of the first order RL and RC circuits

Apparatus:

AFO	
Decade Resistance box	1 NO
Decade inductance box	1 NO
Decade capacitance box	1 NO
Standard Resistance box	1 NO
DSO	1 NO

Circuit diagram:

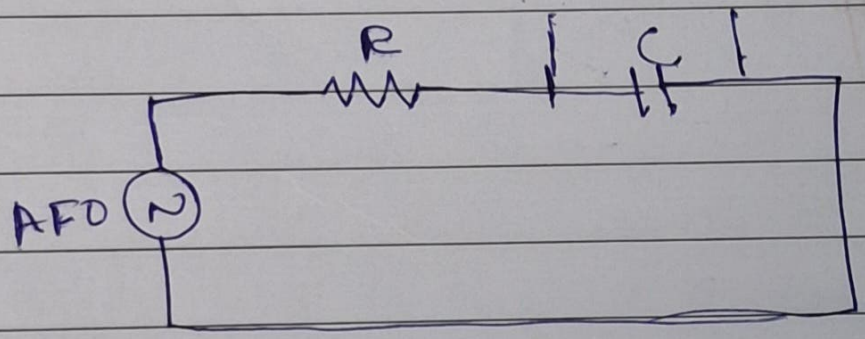


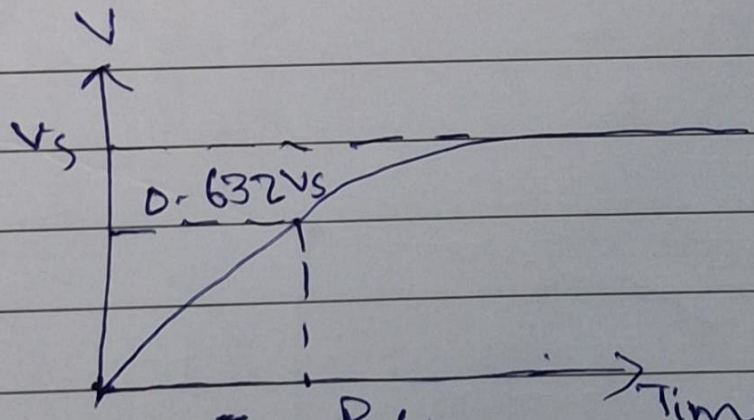


$\frac{1}{10\tau} = \frac{1}{10 \times 1/2 \times 10^{-2}}$ to $\frac{1}{2}$

Tabulation column

Sl. No.	R in ohm	L in Henry	$\tau = L/R$ in ms	Frequency measured in Hz	τ in ms
1	1K	1H	1	100	1.3
2	2K	1H	0.5	~~800~~ 200	~~0.75~~





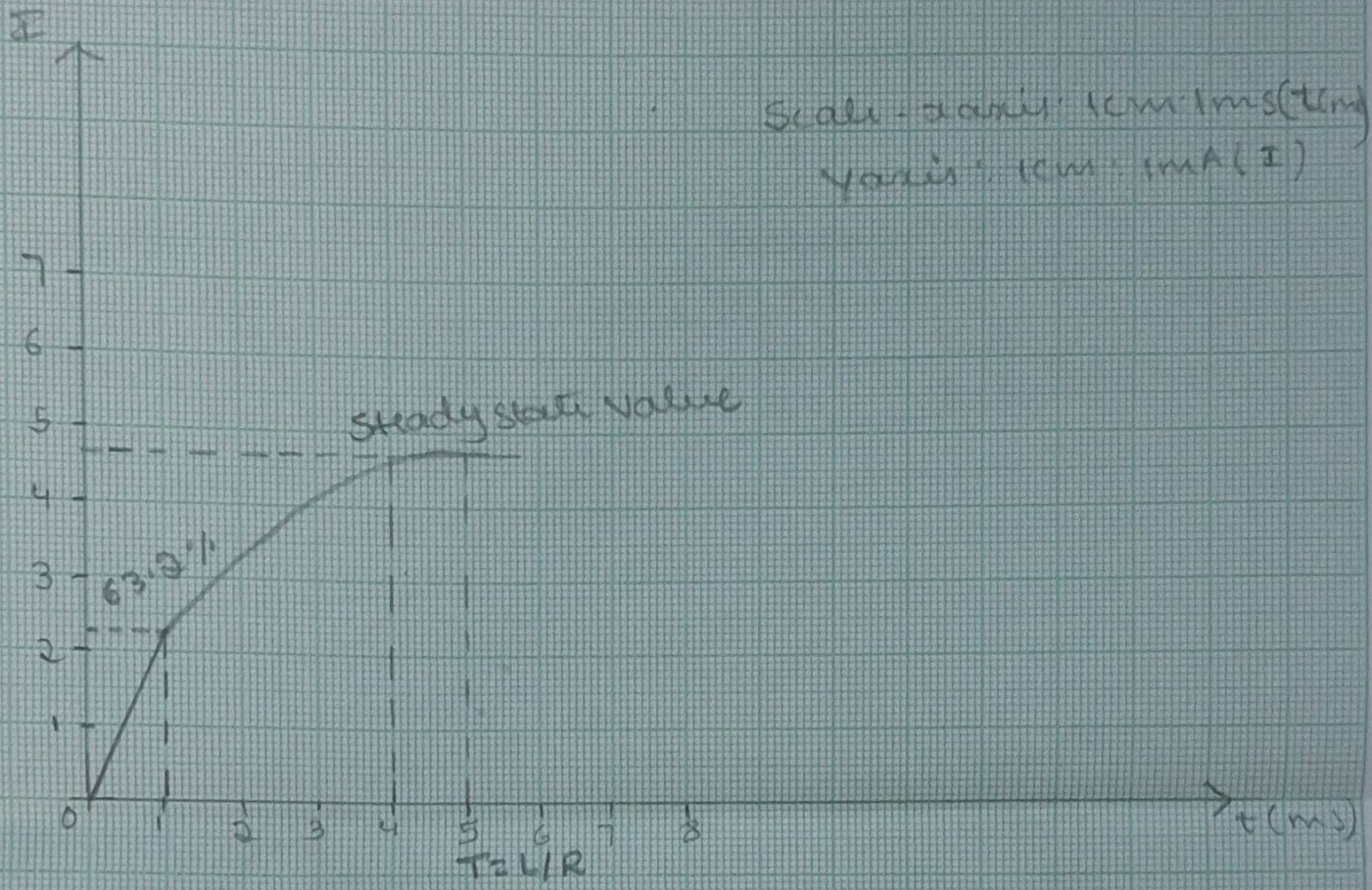
$$\left(V_C = V_S \left(1 - e^{-t/RC}\right) \right)$$

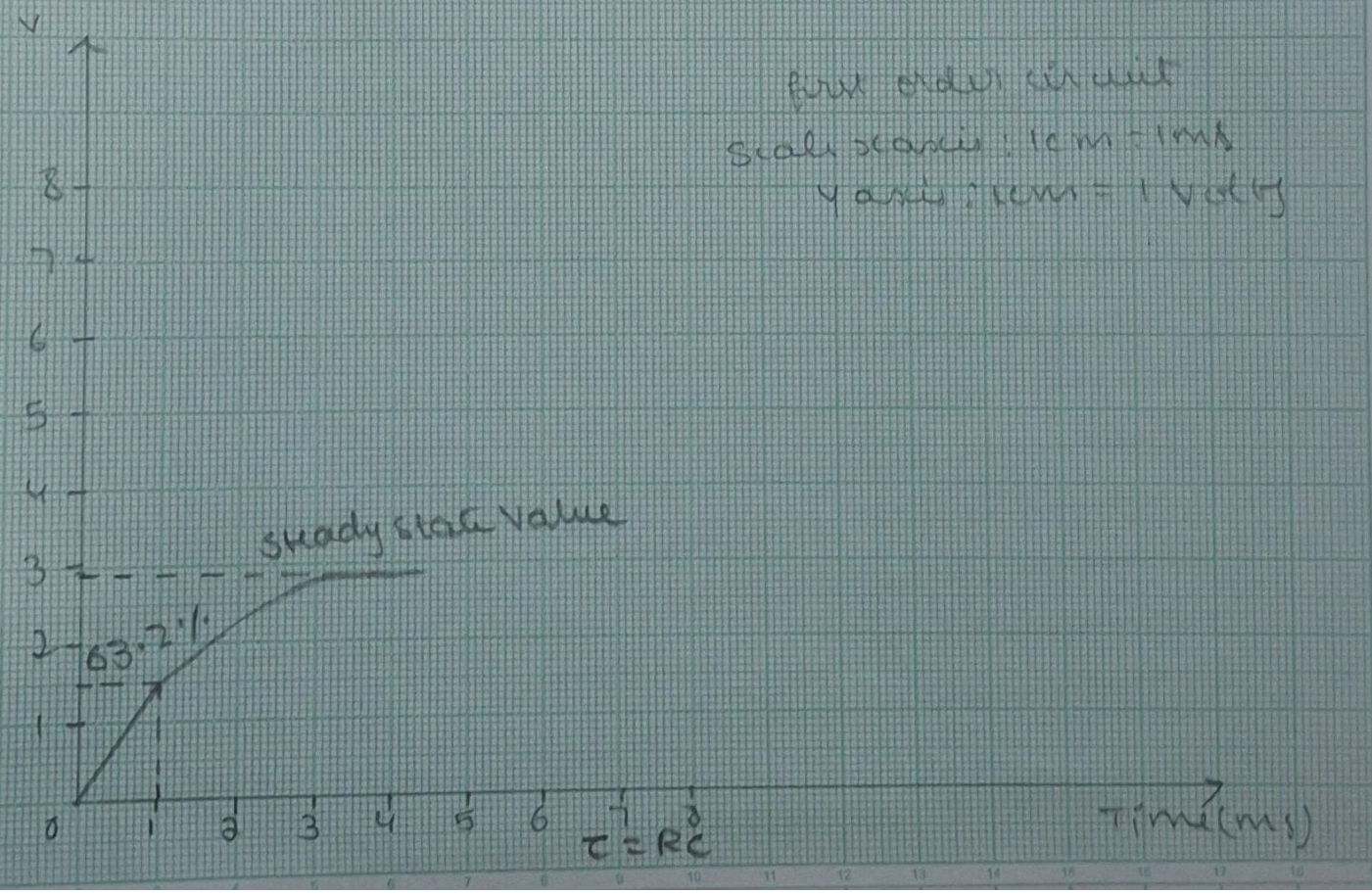
Tabulation column:

Sl. No.	R in ohms	C in Farad	$\tau = RC$ in ms	Frequency in Hz	Time constant measured τ in ms
1	1K	1MF	1	100	1.3
2	2	1MF	2	50	2.3

C-5
V-4

-2M for scot submitting graph


I
Scale - x axis: 1cm: 1ms (time)
y axis: 1cm: 1mA (I)
steady state value
63.2%
0
1
2
3
4
5
6
7
8
t (ms)
T = L/R


V
first order circuit
Scale x axis: 1cm = 1ms
y axis: 1cm = 1 Volt
steady state value
63.2%
0
1
2
3
4
5
6
7
8
Time (ms)
τ = RC