EDU

EAST DELTA UNIVERSITY

PHY 102.7 Lab report 2:

Measurement of various time period with effective length of a simple pendulum.

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Objective: To evaluate various time period with the effective length of a simple pendulum of a given mass and interpret the result. Also by plotting L vs T^2 graph.

Apparatus: A clamp with stand,
Bob with hook,
Split cork,
Stopwatch,
Vernier calliper,
Cotton thread,
Half meter scale.

Observation: Verneir constant of the vernier calliper, V.C = 0.05cm

Diameter of the bob and length of hook:

Radius of the bob, $r = \frac{d}{2}$

$= 0.475\text{cm}.$

Length of the hook, $h = 61.95\text{cm}.$

Calculation:

We know, $T = 2\pi \frac{\sqrt{L}}{g}$

Experimental value, $g_1 = 4\pi^2 \left(\frac{L}{T^2}\right)$

~~$\frac{4\pi^2}{g} = 1.5$~~

$\frac{4\pi^2}{g} = 1.45$

$g = \frac{1.45}{}$

$\therefore g = \frac{4\pi^2}{1.45}$

$= 27.23.$

Precautions:

i. Thread should be very light and strong.

ii. Point of suspension should be resonably rigid.

iii. Pendulum should in the vertical plane without any spin motion.

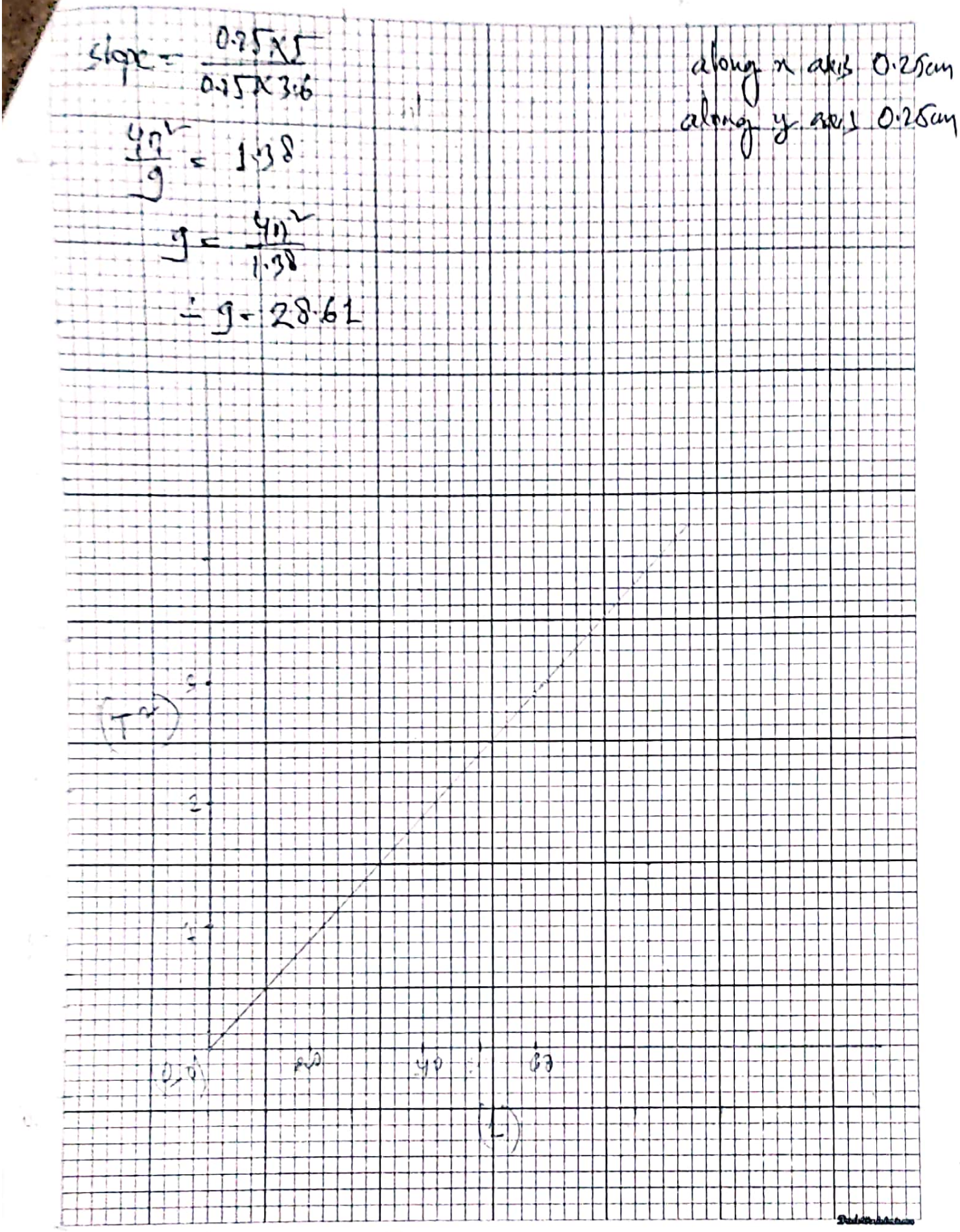
iv. Floor of the laboratory should not have vibration, which may cause a deviation from the regular oscillation of the pendulum.

v. Amplitude of vibration should be small (less than 15).

vi. Length of pendulum should as large as possible in the given situation.

vii. Determination of time for 20 or more oscillation should be carefully taken and repeated for atleast three times.

viii. There should not be strong wind blowing during the experiment.



$$\% \text{ error} = \frac{-27.23 + 28.61}{28.61} \times 100$$

$$= 4.823\% .$$

Bob no.	Radius of bob with zero error correction	length of the thread and hook (l+h) cm	Effective length L = l + (h+r) cm	Time for 20 oscillations s			Mean time	time period
				t_1 s	t_2 s	t_3 s		
1	0.95cm	62	~~28.36~~ 62.95	28.36	29.6	30	29.32	1.466
2	0.95cm	61	~~28.30~~ 61.95	28.30	28.47	29.70	28.69	1.434
3	0.95cm	60	~~28.47~~ 60.95	28.47	29.70	29.72	29.16	1.458

By
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