SAKARYA UNIVERSITY
FACULTY OF ENGINEERING/SCIENCE
2025-2026 FALL SEMESTER
PHYSICS-I LABORATORY
EXPERIMENT REPORT

DEPARMENT: **NAME-SURNAME- SIGNATURE:**

Group Number:

EXPERIMENT NO1

EXPERIMENT TITLE : ONE-DIMENSIONAL MOTION: POSITION, VELOCITY, AND ACCELERATION

OBJECTIVE OF THE EXPERIMENT ***(5 points):***

1.Write and explain the equations that describe uniformly accelerated linear motion.
(Not: Write the names and units of all the quantities in all mathematical equations.)

THEORY OF THE EXPERIMENT (*5 points):*

1. Write and explain the equations that describe uniformly accelerated linear motion.
(Not: Write the names and units of all the quantities in all mathematical equations.)

EXPERIMENTAL SETUP:

1) **Draw the setup used in experiment. (*3 points*)**

2) **Write the names of materials used in experiment and briefly explain them.*(3 points)***

PROCEDURE OF THE EXPERIMENT

Explain the steps of the experiment procedure completely and sequentially. *(5 points)*

MEASUREMENTS AND CALCULATIONS

1) Measure of values of **h** (the height of the wedge from the ground) and **d** (the hypotenuse length of the incl ined plane) of the setup used during the experiment. ***(5 points)***

h=……..cm d=… .....cm

2) Calculate the theoretical acceleration ($a_{theretical}$). **(Take g=980cm/s)** ***(10 points)*** $a = g\sin\theta = \frac{gh}{d}$

3) Fill the table below appropriately using the data you obtained. (15 points)

Point no	x_n **(cm)**	t_n **(s)**	x_{n+1} **(cm)**	x_{n-1} **(cm)**	t_{n+1} **(s)**	t_{n-1} **(s)**	V_n ***(cm/s)***
0				xxxx		xxxx	
1							
2							
3							
4							
5							
6			xxxx		xxxx		xxxx

4) Calculate the " V_n" values using the formula. ***(5 points)***

$$V_n = \frac{X_{n+1} - X_{n-1}}{t_{n+1} - t_{n-1}}$$

5) Using Table 1, plot the **Position - Time** and **Velocity - Time** graphs on graph paper. ***(30 points)***

6) Find the **experimental acceleration** of the object from the Velocity-Time graph. **(5 points)**

a =

7) Calculate the **% error** for the accelerations and interpret the results by comparing them. ***(5 points)***

$$\left(\%Error = \frac{(Experimental\ value - Theoretical\ value)}{Theoretical\ value} x100\right)$$

EXPERIMENT QUESTIONS

1) Can you estimate the velocity at time t_n using the average velocity between t_{n-1} and t_{n+1} ? Proof this using your x- t graph. ***(2 points)***

2) **Draw and show the forces acting on an object resting on an inclined plane when it is released.** ***(2 points)***