

## SAKARYA UNIVERSITY FACULTY OF ENGINEERING/SCIENCE 20252026 FALL SEMESTER PHYSICS-I LABORATORY EXPERIMENT REPORT

GROUP NUMBER:  EXPERIMENT NO 2  EXPERIMENT TITLE : TWO-DIMENSIONAL MOTION  OBJECTIVE OF THE EXPERIMENT (5 points)	DEPARTMENT:	NAME-SURNAME-SIGNATURE:
EXPERIMENT TITLE : TWO-DIMENSIONAL MOTION		
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		SIONAL MOTION

THEORY OF THE EXPERIMENT (5 points):			
1) What kind of motions occurs along the x- axis in projectile motion? Write an equation shows the x- component of velocity as a function of time.			
	Answer the same question for the y-axis.		
2)			
2)	Define the concepts of the $h_{max}$ (maximum height) and R (range) in projectile motion and write their numerical equations with explanations.		
3)	What are the components of the acceleration vector in projectile motion? Write the answer with an explanation.		

EX	EXPERIMENTAL SETUP				
1.	Draw the setup used in the experiment. (3 points)				
2.	Write the names of the materials used in the experiment and briefly explain them. (3 points)				
DD	OCEDURE OF THE EXPERIMENT				
EX	plain the steps of the experiment procedure completely and sequentially. (4 points)				

MEASUREMENTS AND CALCULATIONS
1) Measure the values of <b>h</b> (the height of the wedge from the ground) and <b>d</b> (the hypotenuse length of the
inclined plane) of the setup used during the experiment. (5 points)

2) Fill the table below appropriately using the data you obtained. (*5points*)

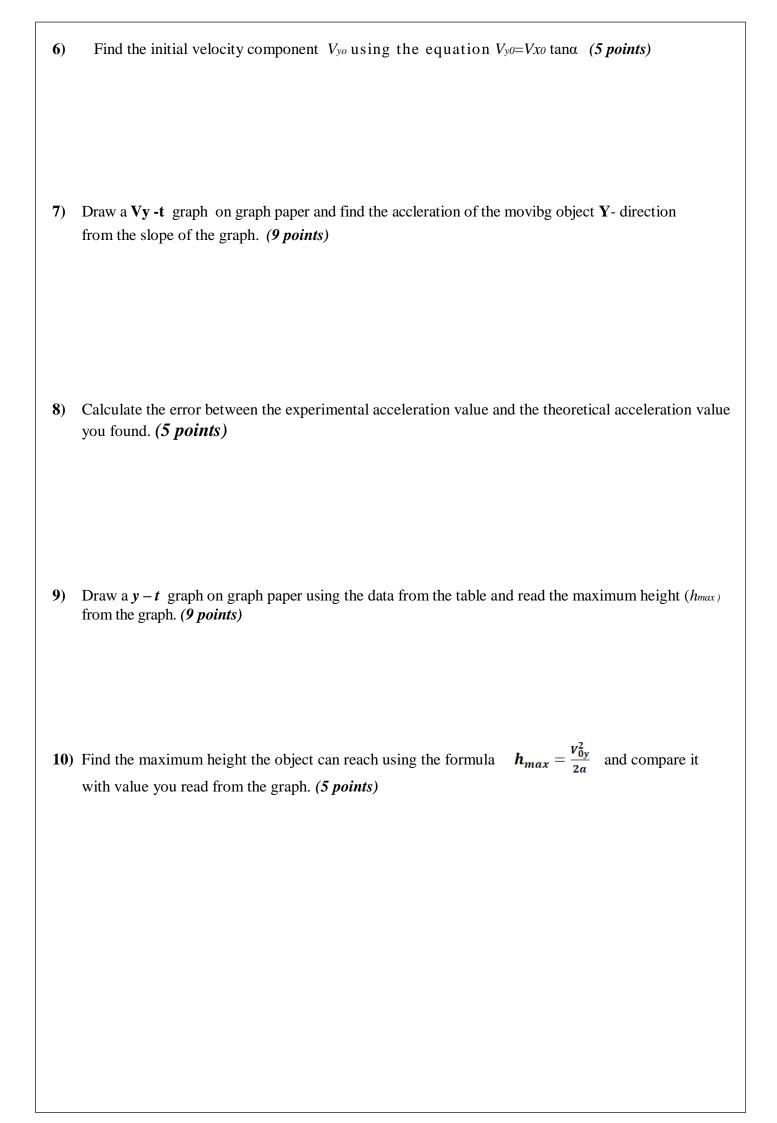
Table 1

Table 1						
Point No	X <sub>n</sub>	Yn	<i>t</i> n	Vxn	Vyn	$V_n$
0						
1						
2						
3						
4						
5						
6						

3) Calculate the y- components of the velocity at each point, using the equation  $V_{yn} = \frac{yn+1-yn-1}{tn+1-tn-1}$  and record them in the table . ( $V_{yo}$  excluded) (10 points)

4) Draw an x-t graph on graph paper using the data from the table. Find the horizontal velocity value  $(V_{xn})$  of the moving object (which is the same at every point) from the slope of graph and record it in table.

5) Calculate the speed (Vn) of the object as it passes through each point using the Pythagorean theorem and record it in table. (*5points*)



Ex	eperiment Questions
1	1 ITains some of your values werify the relationship between smooth and the value of the second and the value of
1.	1.Using some of your values, verify the relationship between speed and the x- and y-components of velocity. What does it mean for the y-component of the velocity to be negative? (3 points)
<i>2</i> .	When is the speed at its minimum value, and when is it at its maximum value? Is it zero at any time? (3 points)
	points)
2	Find the range (D) using the theoretical range formula. Compare the observed range with the value
3.	Find the range (R) using the theoretical range formula. Compare the observed range with the value calculated using the formula. (3 points)