LAB NUMBER 2

ELASTIC PROPERTIES OF RUBBER

INSTRUCTIONS FOR EXPERIMENTS

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FIG. 2 O' RING IN TENSION

FIG. 1 WEIGHTS SUSPENDED FROM O'RING

F = mg = 2T



FIG. 3 THREE WEIGHTS

EXPERIMENTAL DESCRIPTION

- 1. Fig. 1 shows weights suspended from O Ring.
- 2. The suspended weights cause stretching or the lengthening of the O-Ring . The Weight or the vertical force, F = m g, is balanced by tension = 2T in the both parts of the O-Ring
- 3. There are three weights (masses) of magnitudes shown in Fig. 3.
- 4 Start without any of the masses suspended and attach Two clips to the O-Ring as shown in Fig. 1.
- 5. Measure the length between the clips using a Vernier Caliper (mm), and the diameter of the O-Ring (mm) using a micrometer
- 6 Add masses one at a time and correspondingly measure the length between the clips and diameter of the O-Ring and enter the data in the table below.

Number	Masses Added	Total Mass	Distance Between	Diameter of O-
	(g)	(g)	Clips	Ring
			(mm)	(mm)
1	0	53 (Mass of the Assembly)		
2	1007	1060		
3	1018			
4	1021			
5	-1021			
6	-1018			
7	-1007			

Resolution of the Mass = 1 gram.

7. Enter **Your** data (**ONLY IN THE SHADED AREA**) in the Computer Software. Your data should be different from those already in the computer. There are two worksheets in this software. The first one is ' **data**' and the second one is called ' **calculation**'.

8 Pl be careful to enter **your** the uncertainty values in the second (**calculation**) worksheet

Data Worksheet

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3	NUMBER	WEIGHT ADDED	TOTAL WEIGHT	DISTANCE BETWEEN	DIAMETER OF O-RING				
4		(g)	(g)	CLIPS (mm)	(mm)				
5	1	51	51	173	3.35				
6	2	1013	1064	188	3.15				
	3	1022	2086	217 255	2.98				
9		-1049	2086	233	3.01				
10	6	-1022	1064	196	2.29				
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Calculation Worksheet

Uncertainty of the Measurement tool for Diameter	0.002	(mm)
Uncertainty of the Measurement tool for Length	1	(mm)
Uncertainty of the Measurement tool for Length	0.0098	(N)

1		Uncertainty of t	rne ivieasurement t	ooi tor Diameter	111012	(mmi		I	
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- 8 Carry out one set of sample calculations
- 9 Report on (a) Modulus of Elasticity, E, (b) Poisson's Ratio ν , using the plotted graphs and (c) Uncertainties associated with each of the two (E, and ν)
- 10 Report Conclusions