Lab Report

Name of the Experiment :

Your Name :

Your ID # :

Name of the Lab Partner :

Date :

Instructor's comments:

Data Tables:

Vernier Constant (V.C.) of the slide calipers,

$$V.C = \frac{The\ value\ of\ one\ smallest\ division\ of\ the\ main\ scale}{Total\ number\ of\ divisions\ in\ the\ vernier\ scale}$$

Least Count (L.C.) of the Screw Gauge

$$L.C. = \frac{Pitch}{Total\ number\ of\ divisions\ in\ the\ circular\ scale}$$

Table-1: Data for the radius of the cylinder

No. of obs.	Main scale reading, x (cm)	Vernier scale division, d	Vernier constant V_C (cm)	Diameter $y = x + V_c \times d$ (cm)	Mean diameter, D (cm)	Radius, $a = \frac{D}{2}$ (cm)
1						
2						
3						
4						
5						

Table-2: Data for the radius of the wire

No. of obs.	Linear scale reading, x (cm)	Circular scale division, d	Least count, L_c (cm)	Diameter $y = x + d \times L_c$ (cm)	Mean diameter, D (cm)	Instru-mental error (cm)	Corrected diameter, D (cm)	Radius $r = \frac{D}{2}$ (cm)
1								
2								
3								
4								
5								

Table-3: Data for the time period

No. of obs.	Time for 10 oscillations, t (sec)	Time period, T= t/10 (sec)	Mean T (sec)
1			
2			
3			
4			
5			

Length of the wire, l: (i) _____cm (ii) _____cm (iii) _____cm

Average length of the wire, l = _____cm

Mass of the cylinder, M= _____ kg

Calculations:

Moment of Inertia of the cylinder, $I = \frac{1}{2}Ma^2$ =

Modulus of rigidity of the wire, $\eta = \frac{8\pi I l}{T^2 r^4}$ (SI unit)

Error Calculation:

Standard value of the modulus of rigidity of the material of the wire = 7.7×10^{10} SI Unit.

Percentage error = $\frac{Standard\ value \sim Experimental\ value}{Standard\ value} \times 100$

= _____

Results:

Questions:

1. How will the period of oscillation be affected if the cylindrical mass of the pendulum be made heavy?

3.Discuss about the sensitivity of the calculation of the radius of the wire and hence its effect on the resultant modulus of the rigidity.

Discussion: