Lab Report

Name of the Experiment :

Your Name :

Your ID # :

Name of the Lab Partner :

Date :

Instructor's comments:

Data Tables:

Table 1: Ruler measurements

Data No.	Length, L (cm)	Radius, R (cm)	$\bar{L}$ (cm)	$\bar{R}$ (cm)
1				
2				
3				
4				
5				
6				

Table 2: Finding Length using Vernier Scale

Vernier constant: _____ cm

Data No.	Main Scale reading (cm)	Vernier scale division, d	Length (cm)	$\bar{L}$ (cm)	$(\bar{L} - L_i)^2$ (cm^2)	σ_L (cm)
1						
2						
3						
4						
5						
6						

Table-3: Data for the radius of the cylinder

Least count, LC=_____cm

Instrumental error (if any) = _____ cm

Data	Linear scale reading, x (cm)	Circular scale reading, $y = d \times L_c$ (cm)	Diameter x + y (cm)	Instrumental error (cm)	Corrected diameter, D (cm)	Radius, $r = \frac{D}{2}$ (cm)	Mean radius, $\bar{r}$ (cm)	$(\bar{r} - r_i)^2$ (cm^2)	σ_r (cm)
1									
2									
3									
4									
5									
6									

Calculation for Volume and its error:

$$\textbf{Volume of a cylinder} = \pi r^2 l$$

1. Using the ordinary ruler: Volume of the cylindrical rod, V_1 =

2. Using the Vernier scale and screw gauge: Volume of the cylinder, V_2 =

3. Error in volume calculation from Vernier ruler and screw gauge measurement (use **propagation of error**, equations 6,7),

   σ_V =

4. Final result, $V_2 \pm \sigma_V$ =

Results:

Questions:

1. How many of the length readings lie in the interval $L_{av} \pm \sigma_L$?

2. What fraction of the 6 readings is this?

3. How does the percentage compare with 68.3 %?

4. Which is a more precise measuring tool: ruler or Vernier caliper? Why?

Discussion: