**APPLIED PHYSICS LAB ASSIGNMENT NO. 2**

Name: “Muhammad Junaid Nazir”

Roll No.: “200828”

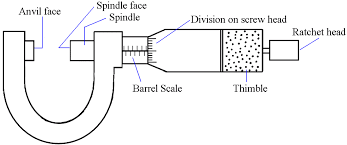
Department: “Computer Science (B S)”

Section: “B”

**Experiment: Measuring Quantities Using Screw Gauge**

Screw Gauge:

The screw gauge is an instrument used for measuring exactly the diameter of a thin wire or the width of a sheet of metal.



Instruments Required:

* Screw Gauge
* Cylinder
* Sphere

Procedure for Measuring Diameter of Cylinder and Sphere:

1. First of all calculate the pitch and the least count of the given screw gauge.

2. Find the zero error with its proper sign.

3. Now insert the wire between the screw and the steed of the screw gauge. Move the screw forward by rotating the ratchet till the wire is gently gripped between the screw and the steed.

4. Record the readings on the main scale and the circular scale and add the two readings. This gives the observed diameters.

5. Apply the zero correction with its proper sign to the mean observed diameter and find the correct diameter.

Observation and Calculations:

Calculations for Cylinder:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Zero Error  (a) | Zero Correction (b)  b = a \* L.C mm | Main Scale Reading  (x) mm | Circular Scale Reading  (n) | Diameter(y)  y = x + (n \* L.C) | Final Diameter(d)  d = y ± b | Cross-sectional Area  πr²  mm² |
| 14 | 14 \* 0.01 = 0.14 mm | 0 mm | 62 | 0 + (62 \* 0.01)  =  0. 62 mm | 0. 62 – 0.14  =  0.48 mm | 0.181  mm² |

Calculations for Sphere:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Zero Error  (a) | Zero Correction (b)  b = a \* L.C mm | Main Scale Reading  (x) mm | Circular Scale Reading  (n) | Diameter(y)  y = x + (n \* L.C) | Final Diameter(d)  d = y ± b | Area  4πr²  mm² | Volume  4/3πr³  mm³ |
| 18 | 18 \* 0.01 = 0.18 mm | 9 mm | 12 | 9 + (12 \* 0.01)  =  9. 12 mm | 9. 12 – 0.18  =  8.94 mm | 251.09  mm² | 374.13  mm³ |