7. Calculate the time period.

8. Calculate acceleration due to gravity (g) using appropriate formula. Find the mean value.

To find the length of second pendulum:

9. Use appropriate formula to find the length of second pendulum [after knowing the value of g]

10. Plot a graph of T Vs L as well as T^2 Vs L. Find the length of second pendulum from the graph.

OBSERVATIONS:

Least count of vernier callipers = … … … …

Least count of meter scale = … … … … … ..

Least count of stop watch = … … … … … ...

Observation Table:

- **To find vertical radius of bob:**

S.N.	Main scale reading (a) (cm)	Vernier scale division (V)	Vernier scale reading ($b = V \times L.C.$) (cm)	Total reading ($a + b$) (cm)	Mean diameter (d) (cm)	Radius of bob (r) (cm)
1.						
2.						
3.						

- **To find acceleration due to gravity and length of second pendulum:**

S.N.	Effective length of simple pendulum L (cm)	Time taken for 20 oscillations t (sec)	Time period $T = \dfrac{t}{20}$ (sec)	T^2 (s^2)	Acceleration due to gravity $g = \dfrac{4\pi^2 L}{T^2}$ (cm/s^2)	Mean g (cm/s^2)	Length of second pendulum $L_s = \dfrac{g}{\pi^2}$ (cm)
1.	40						
2.	60						
3.	80						
4.	100						
5.	120						

CALCULATIONS:

From above table, the mean value of acceleration due to gravity is: $g = $ … … … cm/s^2.

$$= \text{………… } m/s^2$$

The effective length of second pendulum is: $L_s = $ …………. cm.   [From table]

From graph, the mean effective length of second pendulum is: $L'_s = $ ……….cm [from T vs L graph]

and $L''_s = $ ……….. cm.   [from T^2 vs L graph]

$$\therefore \text{ mean effective length of second pendulum} = \frac{L_s + L'_s + L''_s}{3}$$

$$= \text{…………. } cm.$$