

# LSF KNOWLEDGEBASE

Name:..... Index No.....

232/3

PHYSICS

PRACTICAL

PAPER 3

Candidate's Signature:.....

Date:..... Class .....

## LSF Knowledgebase SERIES

You are provided with the following.

- A watch glass
- A small piece of Plasticine
- A marble
- A stop watch
- A vernier callipers
- An electronic balance
- A burette
- A plane mirror.

a) Record the mass  $m$  of the marble.

(1 mark)

$m =$  .....

b) Place the watch glass flat on the table with a small piece of Plasticine to fix it firmly to the bench at the point it touches!

Release the marble from one end of the watch glass and time ten complete oscillation with a stop watch. Repeat this three times.



Fill and complete the table below.

(2 marks)

	Time for 10 oscillations	Periodic time $T(S)$
1		
2		
3		

Measure the diameter of the marble using vernier callipers and hence determine its volume.

I. Diameter ..... (1 mark)

II. Volume given  $V = \frac{4}{3}\pi r^3$  (2 marks)

d) Calculate the radius of curvature of the watch glass R given  $R - V = \frac{5gT^2}{7(2\pi)^2}$  Where r is the radius of the marble. (Take  $g = 9.8 \text{ m/s}$  and  $\pi = 3.142$ ) (1 mark)

e) i) Clean the watch glass carefully. Place the mirror horizontally on the bench and put the watch glass on it so that the centre of the watch glass lies above the millimetre scale.

ii) Fill the burette with water. Run a little water out of the burette into a beaker to make sure its running smoothly. Then move the burette over the watch glass and lower its tap to a few centimeters above the watch glass.

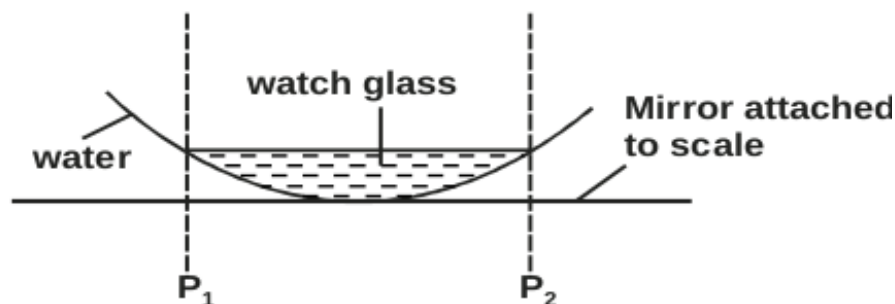
iii) Record the burette reading  $V_0$  ; and then run  $1.5 \text{ cm}^3$  of water into the watch glass.

$V_0 = \dots\dots\dots$  (1 mark)

Again record the new burette reading  $V_1$

$V_1 = \dots\dots\dots$  (1 mark)

vi) Mark two positions ( $P_1$  and  $P_2$ ) of the extreme sides of the pool of water in the watch glass against the scale attached to the mirror as is shown below.



v) Run in more water from the burette in steps of  $1.5 \text{ cm}^3$ , each time recording the burette reading and the corresponding positions of the edges of the pool of water  $P_1$  and  $P_2$  in each case. Take a total of 7 readings.

	1	2	3	4	5	6	7
Burette Reading ( $\text{cm}^3$ )							
$P_1$							
$P_2$							
$d = P_2 - P_1 (\text{cm})$							
$V (\text{cm}^3)$							
$d^4 \text{ cm}^4$							

(5 marks)

Where  $d$  - is the diameter of pool of water in each case.

$V$  - is the corresponding volume of water in the watch glass.

f) On the grid provided, plot a graph of  $d^4$  against  $V$  (x – axis)

(4 marks)

g) Determine the slope of the graph S.

(2 marks)

