General Certificate of Education
Advanced Level Examination
June 2013

Physics PHY6T/Q13/task

Unit 6 Investigative and Practical Skills in A2 Physics
ISA (Q) Damped SHM

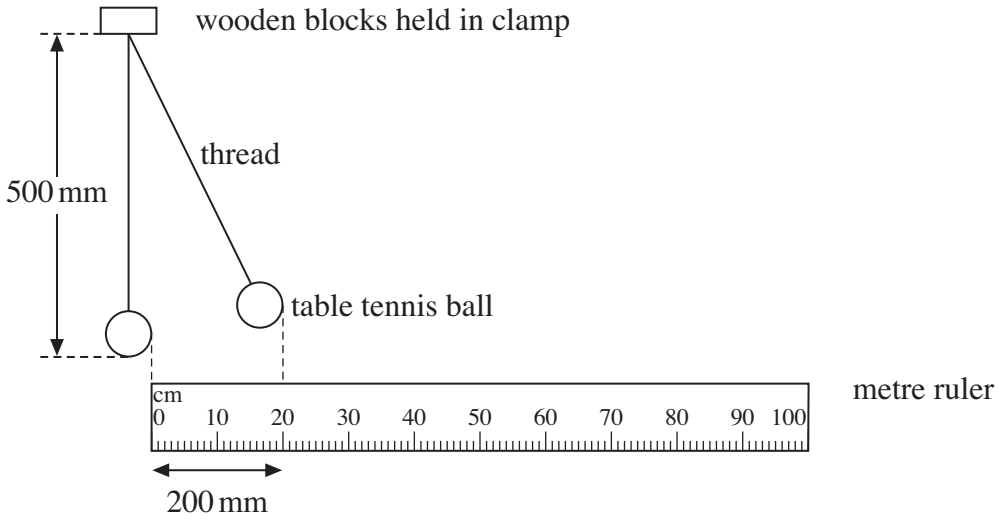
Stage 1: Task sheet

This task is worth 7 marks

You are advised to read through these instructions before beginning your work.

You are going to carry out an experiment to investigate the relationship between amplitude and elapsed time (ie time from release) for a ball oscillating on a thread.

Figure 1



- Set up the apparatus as shown in **Figure 1**.
- Displace the ball 200 mm to one side and release it so that it oscillates. Take measurements to determine as accurately as possible the time period, T, of the oscillations.
- Displace the ball 200 mm to one side and release it. Determine the amplitude after 1 oscillation and calculate the elapsed time, t. The elapsed time is calculated by multiplying the number of oscillations by T.
- Displace the ball 200 mm to one side and release it. Determine the amplitude after 2 oscillations and calculate the elapsed time, t.
- Repeat the procedure for 3 oscillations, 4 oscillations, 5 oscillations and 6 oscillations.
- Take sufficient readings to reduce the uncertainty in your results.
- Record all your results in a table which should include amplitude A, elapsed time t and $\ln(A/\text{mm})$.
- Plot a graph of $\ln(A/\text{mm})$ on the y-axis against t.

Turn over ▶

After the Investigation

At the end of your investigation, hand in all your written work, including the graph, to the supervisor.

This documentation will be required for Stage 2 of the ISA. Ensure that you have entered your centre details, candidate number and name on all the sheets you have completed.