Chapter 1

General physics

1.1 Length and time

1. 0625_s12_qp_31 Q: 1

The period of the vertical oscillations of a mass hanging from a spring is known to be constant.

(a) A student times single oscillations with a stopwatch. In 10 separate measurements, the stopwatch readings were:

1.8s, 1.9s, 1.7s, 1.9s, 1.8s, 1.8s, 1.9s, 1.7s, 1.8s, 1.8s.

What is the best value obtainable from these readings for the time of one oscillation? Explain how you arrive at your answer.

best value = ...

explanation .....

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..... [1]

(b) Describe how, using the same stopwatch, the student can find the period of oscillation more accurately.

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..... [4]

[Total: 5]

Answers

1. 0625_s12_ms_31 Q: 1

(a)	Period: 1.81 s OR 1.8 s as mean value OR 1.8 s as most common reading / the mode	B1
(b)	Time a minimum of 2 (successive) oscillations	B1
	Divide result by the number of oscillations	B1
	OR	
	Count no. of oscillations in at least 20 s	(B1)
	Divide the time by the number of oscillations	
	OR Divide no. of oscillations by time and find reciprocal	(B1)
	2 of: Repeat (several times) and find mean Time with reference to fixed / fiducial point or top or bottom of oscillation Check / set zero of stop-watch Show knowledge of what is meant by one oscillation	B2
		[Total: 5]