

Practice Question Set For A-Level
Subject : Physics
Paper-3 Topic : Practical Skills

Name of the Student: _____

Max. Marks : 17 Marks

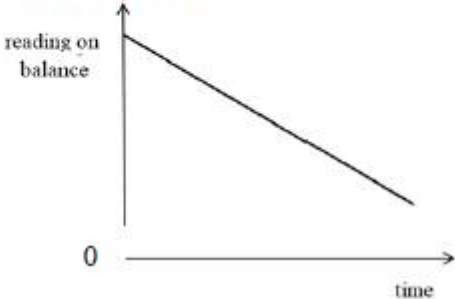
Time : 17 Minutes

Mark Schemes

Q1.

Question Number	Acceptable answers	Additional guidance	Mark
	Direction out of page (1)	The arrow needs to be parallel to the length of the pipe by eye.	1

Q2.

Question Number	Acceptable Answer	Additional Guidance	Mark
(i)	- Both axes labelled (1) - Straight line with negative gradient (1) - Reading on balance does not cut the time axis (1)	MP3 dependent upon MP2 <u>Example of graph</u> 	3

(ii)	• Use of $W = VIt$ (1) • Use of $\Delta E = mL$ (1) • $L = 2.4 \times 10^6 \text{ J kg}^{-1}$ (1)	<u>Example of calculation</u> $W = 12 \text{ V} \times 4.2 \text{ A} \times (6 \times 60) \text{ s} = 1.81 \times 10^4 \text{ J}$ $L = \frac{1.81 \times 10^4 \text{ J}}{7.5 \times 10^{-3} \text{ kg}} = 2.41 \times 10^6 \text{ J kg}^{-1}$	3
(iii)	An explanation that makes reference to the following points: • Energy is transferred (from the beaker/heater /water) to the surroundings (1) • So the calculated value of L will be larger than the true value (1)		2

Q3.

Question Number	Acceptable Answer	Additional Guidance	Mark
	• 1 full cycle read from oscilloscope trace $4.5 \rightarrow 4.7 \text{ div}$ (1) • Converts from div to s (1) • Use of $f = 1/T$ (1) • Use of $v = f\lambda$ (1) • $v = 140 \text{ m s}^{-1}$, which is (much) less than 340 m s^{-1} (1)	<u>Example of calculation</u> $T = 4.6 \text{ div} \times 0.5 \text{ ms div}^{-1} = 2.3 \text{ ms}$ $f = \frac{1}{2.3 \times 10^{-3} \text{ s}} = 435 \text{ Hz}$ $v = 435 \text{ s}^{-1} \times 0.32 \text{ m} = 139 \text{ m s}^{-1}$ Allow “the speed of sound in air” for 340 m s^{-1}	5

Q4.

Question Number	Acceptable Answer	Additional Guidance	Mark
	An explanation that makes reference to the following points: • A thin wire has a large stress (for a given load) (1) • A long/thin wire has a large extension (for a given stress) (1) • Hence the percentage uncertainty in the length/extension is reduced (1)		3