MARK SCHEMES – Physics Unit 6 Homework

Q1 (a) sound waves are longitudinal

1

in longitudinal waves, the oscillations / vibrations are parallel to the direction of energy transfer

allow direction that the wave is travelling for direction of energy transfer

1

water waves are transverse

1

in transverse waves, the oscillations / vibrations are at 90 degrees to the direction of energy transfer

ignore references to wave speed, wavelength or frequency

an answer stating that sound waves travel in all directions but water waves don't is insufficient.

1

(b) $0.0083 = \frac{1}{\text{frequency}}$

1

$\text{frequency} = \frac{1}{0.0083}$

1

frequency = 120 (Hz)

*an answer of 120(.481...) scores **3** marks*

*an answer of 0.12 scores **2** marks*

1

(c)

Level 3: Relevant points (reasons/causes) are identified, given in detail and logically linked to form a clear account.	5-6
Level 2: Relevant points (reasons/causes) are identified, and there are attempts at logically linking. The resulting account is not fully clear.	3-4
Level 1: Points are identified and stated simply, but their relevance is not clear and there is no attempt at logical thinking.	1-2
No relevant content	0
Indicative content **equipment** • a stopclock / stopwatch should be used to time the waves	

- a metre rule should be used to measure distance

determining the frequency of the waves

- the frequency could be determined by finding the time for several waves to pass a point
- the frequency could be determined by finding the how many waves pass a point in a fixed time
- frequency is the average time for one wave to pass a point
- frequency = $\frac{\text{no.of waves}}{\text{total time for waves to pass}}$

determining the speed of the waves

- the speed can be determined by measuring the distance travelled by a wave and the time taken to travel that distance
- the distance used to determine speed should be as long as possible
- speed = distance/time

determining the wavelength of the wave

- the wavelength can be calculated using the speed and frequency of the wave
- wavespeed = frequency × wavelength
- $\text{wavelength} = \frac{\text{wavespeed}}{\text{frequency}}$
- $\text{wavelength} = \frac{\left(\frac{\text{distance}}{\text{time}}\right)}{\left(\frac{\text{no. of waves}}{\text{second}}\right)}$

6

Q2 (a) **B**

1

(b) **A**

1

(c) $\frac{2.5\ (\text{waves})}{0.5\ (\text{s})}$

1

5(.0)(Hz)

1

Q3 (a) (i) (visible) light

accept visible

1

(ii) microwaves

1

(b) J

1

Q4 (a) (i) wavelength

accept frequency

accept speed

1

(ii) amplitude

accept energy

height is insufficient

1

(iii) sound

1