

Name of the Student: _____

Max. Marks : 21 Marks

Time : 21 Minutes

Mark Schemes

Q1.

- (a) the oscillation / vibration (causing the wave)
a movement causes the wave is insufficient 1

for a transverse wave is perpendicular to the direction of energy transfer
accept direction of wave travel 1

and for a longitudinal wave is parallel to the direction of energy transfer
accept direction of wave travel
if no marks awarded allow 1 mark for correctly linking perpendicular with transverse and parallel with longitudinal
the marks may be scored by the drawing of two correctly labelled diagrams 1

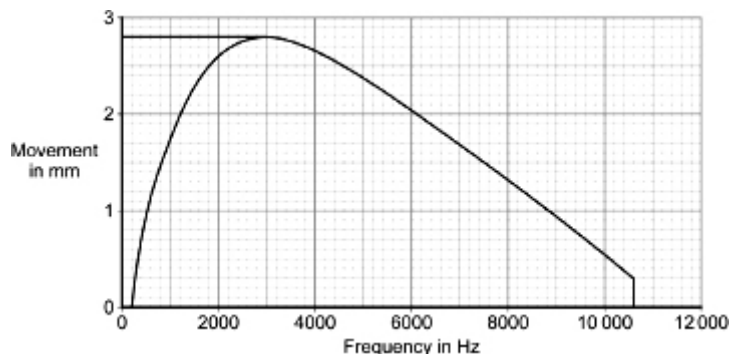
- (b) for radio waves:
accept converse for each mark
- are transverse 1
- travel at speed of light / higher speed 1
- have greater frequencies 1
- can travel through vacuum
accept sound waves are not electromagnetic for 1 mark 1

[7]

Q2.

- (a) 10 600 (Hz)
accept 10.6 kHz 1

- (b) 3000 (Hz)
allow 1 mark for a line drawn to show greatest movement
(allow only if frequency is between 2800 and 3200)
accept other indication of correctly using the graph



2

(c) (No)

*no marks for just the ticked box
reasons can score even if yes is ticked*

(human hearing) range is 20 – 20 000 (Hz)
accept (most) people hear up to 20 000 (Hz) / 20 kHz

1

any **one** from:

- range on graph is within this range
- range on graph starts after 20 Hz
- range on graph is from to 200 – 10 600 (Hz)
- range on graph finishes before 20 000 Hz

1

(d) reliability

this answer only

1

(e) only 1 variable affects dependent variable / size of movement
accept 'results' for 'size of movement'

or

there is only one independent variable

fair test is insufficient

*do **not** accept to control the experiment*

or

to be able to compare (effect of different frequencies)

1

[7]

Q3.

(a) microphone

1

(c) (i) vertical line from any maxima or minima to axis
*do **not** penalise minor errors but
do **not** allow unless intention is clear*

1

(ii) loudness / volume / intensity / energy
*do **not** accept noise*

1

(c) 17

this answer only

1

(d) the greater the distance, the smaller the amplitude

accept volume / intensity / energy / loudness for amplitude

or

there is a (strong) negative correlation between distance and amplitude

or

there is an inverse square relationship between distance and amplitude

*do **not** accept distance and amplitude are inversely proportional*

1

(e) 20 Hz

either order

1

20,000 Hz

accept 20 kHz provided unit has been clearly changed

1

[7]