



KS3 Science

Waves

Mark Scheme

Time available: 31 minutes

Marks available: 31 marks

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Mark schemes

1.

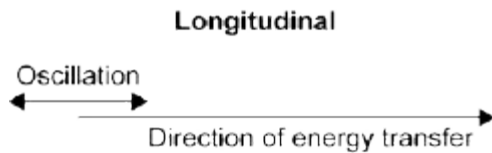
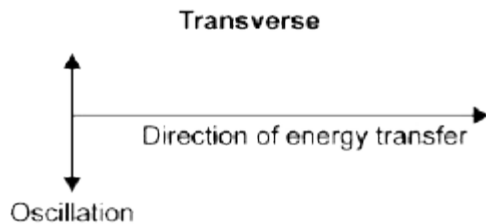
- (a) (i) the oscillation / vibration (causing the wave)
a movement causes the wave is insufficient

1

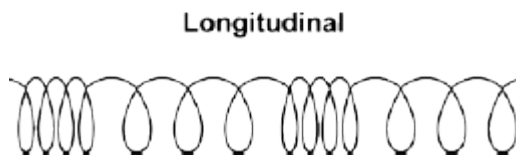
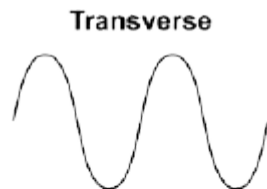
for a transverse wave is perpendicular to the direction of energy transfer
*answers given in terms of direction of wave travel and not energy transfer for both types of wave, score 1 mark for these **two** mark points*

1

and for a longitudinal wave is parallel to the direction of energy transfer
the marks may be scored by the drawing of two correctly labelled diagrams ie



two labelled diagrams showing the general form of a transverse and longitudinal wave gain 1 mark if no other mark has been awarded eg



1

- (ii) mechanical wave
accept specific examples, eg waves on a spring / slinky / seismic / earthquake waves
accept water waves
*do **not** accept shock waves*

1

(b) semicircular waves drawn
judged by eye
do not need to be full semicircles
ignore any rays 1

(c) sound (waves) will diffract (towards the person) 1

or

light (waves) do not diffract (towards the person)

(because) width of door way similar to / less than wavelength of sound (waves)

or

(because) width of doorway much greater than wavelength of light (waves)

a general statement that waves (only) diffract when the width of a gap is similar to the wavelength of the waves can be awarded 1 mark

1

[7]

2.

(a) (i) oscillation 1
direction 1

correct order only

(ii) sound 1

(b) 1.6
allow 1 mark for correct
substitution into correct equation ie 2×0.8 2

(c) as the wavelength increases so does the wave speed 1

extra information eg wave speed increases faster between 0-40 m than between 100-140 m

or

not in proportion 1

[7]

- 3.** (a) decrease in (proportion of) oil as reserves are decreasing 1
- increase in (proportion of) coal / nuclear / gas / as new reserves / more nuclear power stations built 1
- no marks are awarded for simply describing the differences*
- (b) (i) a prediction 1
- forecast based on scientific evidence 1
- (ii) less methane goes into the atmosphere 1
- accept air for atmosphere*
- therefore making global warming less rapid 1
- (c) idea that many devices transform electricity into other useful forms of energy 1
- example related to public health eg refrigeration / production of vaccines / X-ray machines 1
- example related to modern communications eg internet / telephones 1

[9]

- 4.** (a) (i) 3 1
- (ii) 1 1
- accept a definition of frequency ignore units*
- (iii) hertz 1
- (b) straight line in correct direction 1
- judge by eye (from 'a' of waves to 's' of across) ignore arrow*
- accept equal angles shown on waves*

(c) (i) gets smaller

1

(ii) kinetic

accept movement

1

(iii) renewable

1

[7]