3.18 Wave Properties and Behaviour: 10-minute Pack

AQA 8464 · Calculator allowed · about 10 minutes

Total Marks

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 Explain why sound waves cannot travel through a vacuum (for example, through outer space).

(Total for Question 1 is 1 mark)

2 State the approximate range of frequencies that a healthy young human ear can normally detect.

(Total for Question 2 is 1 mark)

3 Explain the difference between a transverse wave and a longitudinal wave, in terms of the direction of vibration of the particles (or field) compared with the direction the wave transfers energy.

(Total for Question 3 is 2 marks)

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4 A wave has a frequency of 50 Hz. Use the Physics Equations Sheet: period = 1 / frequency (T = 1/f), to calculate the period of the wave.

(Total for Question 4 is 2 marks)

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5 A ray of light is reflected from a plane (flat) mirror.

(a) State the law of reflection. **(1)**

(b) The angle between the incident ray and the mirror surface (not the normal) is 35 degrees. Calculate the angle of reflection, measured from the normal. **(2)**

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(Total for Question 5 is 3 marks)

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Mark scheme · 3.18 Wave Properties and Behaviour: 10-minute Pack

Question 1

sound is a longitudinal wave that travels by making particles of a medium vibrate; a vacuum contains no particles, so there is nothing for the wave to travel through, oe **B1**

Answer: Sound needs a medium (particles) to travel through, and a vacuum has no particles.

Question 2

20 Hz to 20 000 Hz (20 kHz) **B1**

Answer: 20 Hz to 20,000 Hz (20 kHz)

Question 3

transverse wave: the oscillations/vibrations are at right angles (perpendicular) to the direction of energy transfer **B1**

longitudinal wave: the oscillations/vibrations are parallel to (along the same line as) the direction of energy transfer **B1**

Answer: Transverse: vibrations perpendicular to energy transfer. Longitudinal: vibrations parallel to energy transfer.

Question 4

substitutes correctly: T = 1/50 **M1**

T = 0.02 s, cao **A1**

Answer: 0.02 s

Question 5

(a) the angle of incidence equals the angle of reflection (both measured from the normal) **B1**

(a) Answer: Angle of incidence = angle of reflection.

(b) finds the angle of incidence from the normal: 90 - 35 = 55 degrees **M1**

(b) angle of reflection = 55 degrees, cao (equal to the angle of incidence, by the law of reflection) **A1**

(b) Answer: 55 degrees

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