

# Sound

## Question Paper 2

Level	IGCSE
Subject	Physics (0625/0972)
Exam Board	Cambridge International Examinations (CIE)
Topic	General Physics
Sub-Topic	Sound
Booklet	Question Paper 2

**Time allowed:** 19 minutes

**Score:** /15

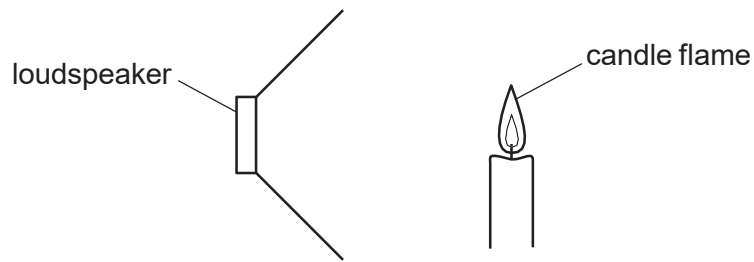
**Percentage:** /100

### Grade Boundaries:





9	8	7	6	5	4	3	2	1
>85%	75%	68%	60%	55%	50%	43%	35%	<30%

## Question 1

A lighted candle is placed in front of a loudspeaker that is making a loud, steady note. The candle flame vibrates because of the sound wave.



Which type of waves are sound waves and in which direction does the flame vibrate?

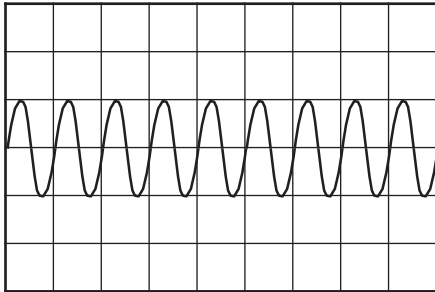
	type of wave	direction of vibration
A	longitudinal	
B	transverse	
C	longitudinal	
D	transverse	

## Question 2

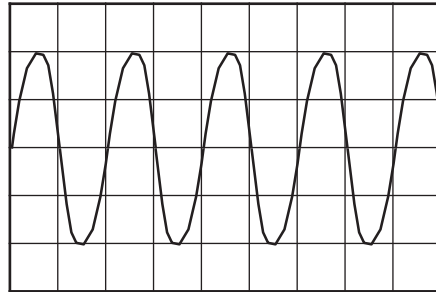
The diagrams show the wave patterns of four sounds shown on a cathode-ray oscilloscope (c.r.o.). The oscilloscope controls are set the same for each sound.

Which sound has the highest pitch?

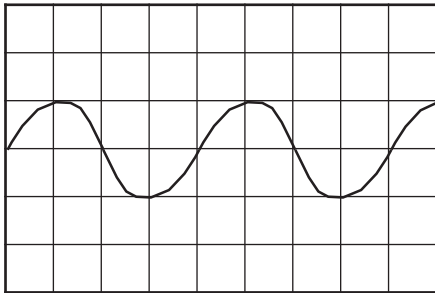
**A**



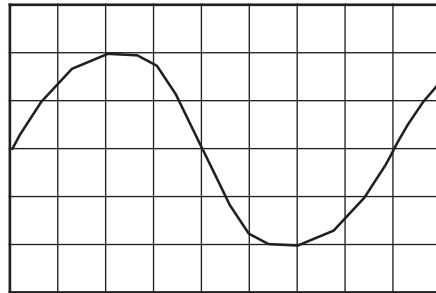
**B**



**C**



**D**



### Question 3

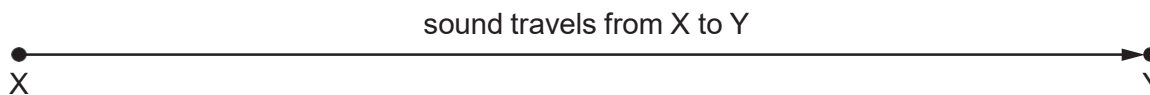
A fire alarm is not loud enough and the pitch is too low. An engineer adjusts the alarm so that it produces a louder note of a higher pitch.

What effect does this have on the amplitude and on the frequency of the sound waves that the alarm produces?

	amplitude	frequency
A	larger	larger
B	larger	smaller
C	smaller	larger
D	smaller	smaller

## Question 4

In an experiment to measure the speed of sound, a student uses a stopwatch to find the time taken for a sound wave to travel from X to Y. She does this six times.



The table shows her results.

measurement	time/s
first	0.5
second	0.7
third	0.6
fourth	0.4
fifth	0.9
sixth	0.5

Which value for the time should be used to calculate the speed of sound?

A 0.4s

B 0.5s

C 0.6s

D 0.9s

## Question 5

Three vibrating objects P, Q and R produce waves in the air of different frequencies as shown.

object	frequency/Hz
P	25
Q	1000
R	15000

Which of these waves can be heard by a human ear?

- A P, Q and R
- B P and Q only
- C P and R only
- D Q and R only

## Question 6

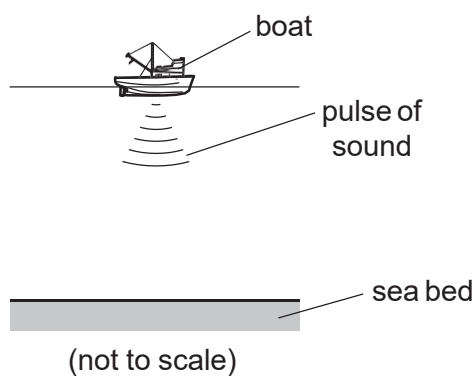
When the volcano Krakatoa erupted in 1883, it was heard 5000 km away.

Which statement about the sound from the volcano is **not** correct?

- A. If such a loud sound were to be made today, an astronaut orbiting in space (a vacuum) at a height of 400 km could hear it.
- B. People further from the volcano heard the sound later than people nearer to the volcano.
- C. The amplitude of the sound waves would have been smaller further from the volcano.
- D. The sound was very loud because a lot of energy was transferred to vibrations of the air.

## Question 7

A loudspeaker on a boat produces a pulse of sound in the sea. The echo of the pulse is received back at the boat after 3.0 s. The depth of the sea under the boat is 2250 m.



From this information, what is the speed of sound in the sea water?

- A 330 m/s      B 750 m/s      C 1500 m/s      D 6750 m/s



## Question 8

To estimate the width of a valley, a climber starts a stopwatch as he shouts. He hears an echo from the opposite side of the valley after 1.0 s.



The sound travels at 330 m/s.

What is the width of the valley?

A 82.5 m

B 165 m

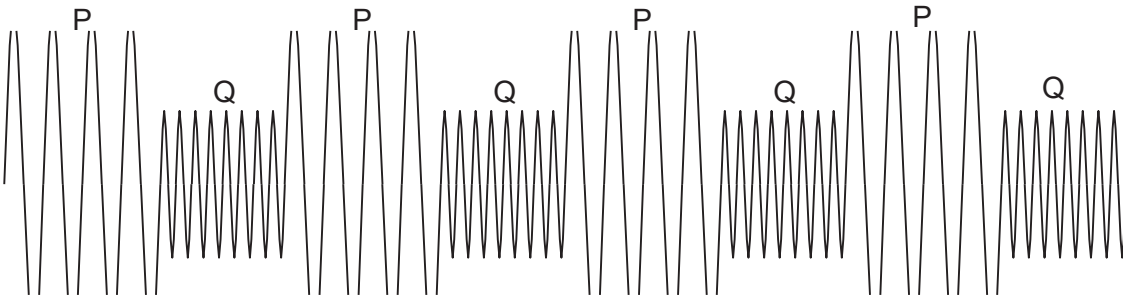
C 330 m

D 660 m

## Question 9

A police car sounds its siren when travelling to an emergency. The siren produces two different sounds P and Q, which are emitted alternately.

The diagram represents the sound waves emitted by the siren.



Which of the two sounds P and Q is the louder and which has the higher pitch?

	louder sound	sound of higher pitch
A	P	P
B	P	Q
C	Q	P
D	Q	Q

## Question 10

A girl stands at a distance from a large building. She claps her hands and a short time later hears an echo.

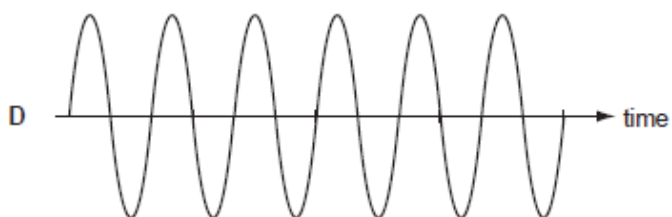
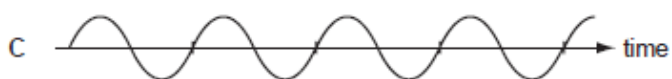
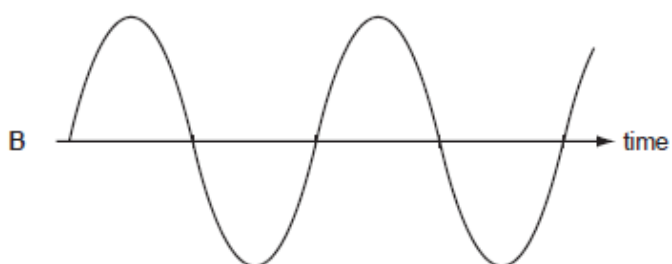
Why is an echo produced when the sound waves hit the building?

- A The sound waves are absorbed.
- B The sound waves are diffracted.
- C The sound waves are reflected.
- D The sound waves are refracted.

## Question 11

The diagrams represent the waves produced by four sources of sound. The scales are the same for all the diagrams.

Which sound has the highest frequency?



## Question 12

Sound travels by wave motion.

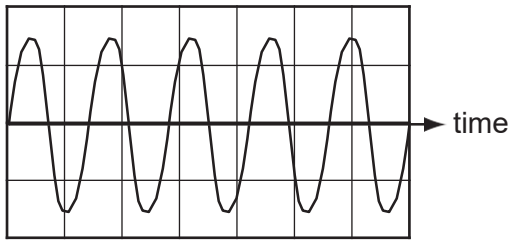
Which property of waves causes echoes?

- A diffraction
- B dispersion
- C reflection
- D refraction

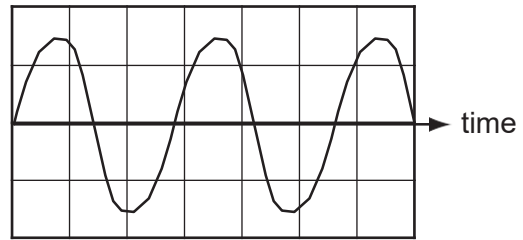


## Question 14

The diagrams show the wave shapes of two different sounds. The scales are the same in each diagram.



sound 1



sound 2

How does sound 2 compare with sound 1?

- A. Sound 2 is louder than sound 1.
- B. Sound 2 is quieter than sound 1.
- C. Sound 2 has a higher pitch than sound 1.
- D. Sound 2 has a lower pitch than sound 1.

## Question 15

A student wishes to measure the speed of sound in air. She plans to measure the time between making a sound and hearing the echo from a cliff.



She will use the equation:  $\text{speed} = \frac{\text{distance}}{\text{time}}$ .

Which type of sound should she make and which distance should she use in her calculation?

	type of sound	distance to use
A	continuous sound	$\frac{\text{distance to cliff}}{2}$
B	continuous sound	distance to cliff $\times$ 2
C	short, sharp sound	$\frac{\text{distance to cliff}}{2}$
D	short, sharp sound	distance to cliff $\times$ 2