Sound

Question Paper 1

Level	IGCSE
Subject	Physics (0625/0972)
Exam Board	Cambridge International Examinations (CIE)
Topic	General Physics
Sub-Topic	Sound
Booklet	Question Paper 1

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%

A sound wave travels through air as a series of compressions and rarefactions.

Which row correctly compares the air pressure in a compression and the air pressure in a rarefaction to the air pressure nearby where there is no sound wave?

	air pressure in a compression	air pressure in a rarefaction
A	higher	higher
B	higher	lower
C	lower	higher
D	lower	lower

‘ A sound wave has a certain amplitude and a certain frequency.

A second sound wave is quieter and lower in pitch than the first sound wave.

The second wave has

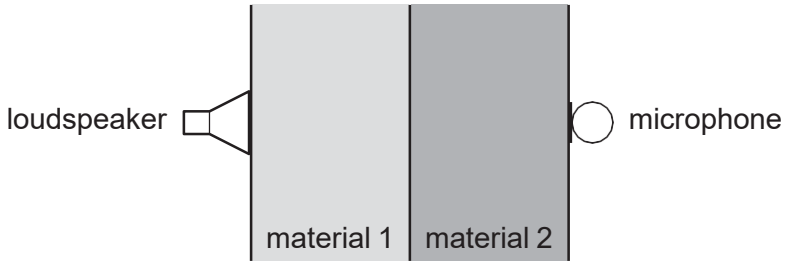
A. a larger amplitude and a greater frequency.

B. a larger amplitude and a smaller frequency.

C. a smaller amplitude and a greater frequency.

D a smaller amplitude and a smaller frequency.

The sound from a loudspeaker must pass through two materials to reach a microphone.



Which combination of materials gives the shortest time for the sound to reach the microphone?

	material 1	material 2
A	air	hydrogen
B	air	water
C	copper	aluminium
D	water	oil

Which range of wave frequencies includes only sounds that can be heard by a human with normal hearing?

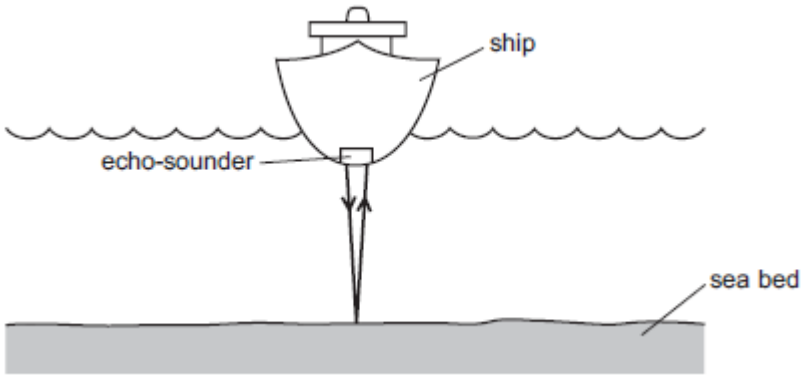
A. 3.0 Hz to 300 Hz

B. 30 Hz to 3000 Hz

C. 300 Hz to 30 000 Hz

D 3000 Hz to 300 000 Hz

An echo-sounder on a ship produces a pulse of sound. The echo is received by the echo-sounder after two seconds.



The speed of sound in sea-water is 1500 m / s.

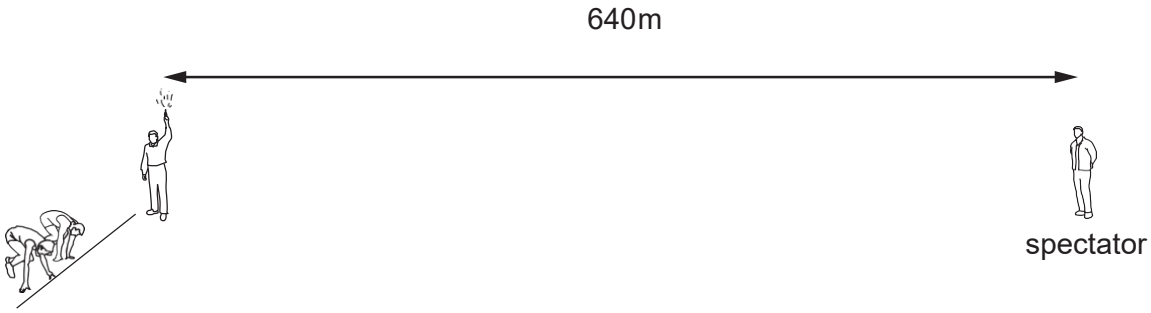
What is the depth of the sea-water below the ship?

A 750 m B 1500 m C 3000 m D 6000 m

Which row states two properties of sound waves?

	can travel through	type of wave
A	a vacuum	longitudinal
B	a vacuum	transverse
C	water	longitudinal
D	water	transverse

A man holding a starting pistol stands 640 m away from a spectator.



The spectator hears the sound of the starting pistol 2.0 s after seeing the flash from the pistol.

Using this information, what is the speed of sound in air?

A 160 m/s B 320 m/s C 640 m/s D 1280 m/s

A quiet sound is produced by a loudspeaker. The loudness of the sound is increased.

Which property of the sound wave is increased?

A amplitude

B frequency

C speed

D wavelength

The frequency of a musical note is increased.

A student hearing the sound detects an increase in which property?

A. loudness of the sound

B. pitch of the sound

C. speed of the sound wave

D. wavelength of the sound wave

Question 10

Which row states whether light waves and whether sound waves can travel in a vacuum?

	sound waves	light waves
A	no	no
B	no	yes
C	yes	no
D	yes	yes

Question 11

Sounds are produced by vibrating objects. A certain object vibrates but a person nearby cannot hear any sound.

Which statement could explain why nothing is heard?

A. The amplitude of the sound waves is too large.

B. The frequency of the vibration is too high.

C. The sound waves are transverse.

D. The speed of the sound waves is too high.

Two sounds X and Y are produced by loudspeakers.

The amplitude and frequency of each sound wave is given in the table.

	amplitude / mm	frequency / Hz
X	1.3	475
Y	2.0	235

How does sound Y compare with sound X?

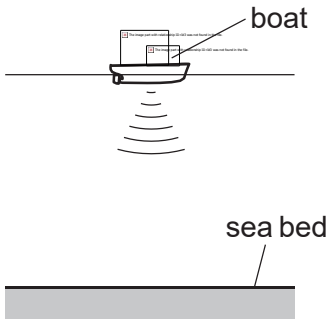
A Y is louder and has a higher pitch.

B Y is louder and has a lower pitch.

C Y is quieter and has a higher pitch.

D Y is quieter and has a lower pitch.

A pulse of sound is produced at the bottom of a boat. The sound travels through the water and is reflected from the sea bed. The sound reaches the boat again after 1.2 s. The speed of sound in the water is 1500 m / s.



How far below the bottom of the boat is the sea bed?

A 450 m B 900 m C 1800 m D 3600 m

What is the approximate range of audible sound frequencies for a human with good hearing?

A. from 20 Hz to 2000 Hz

B. from 20 Hz to 20 000 Hz

C. from 200 Hz to 20 000 Hz

D. from 200 Hz to 200 000 Hz

A boy blows a whistle that has a frequency of 10 000 Hz. The boy's friend cannot hear the sound from the whistle. The friend has normal hearing.

What could be a reason why he cannot hear the sound?

A The amplitude is too large.

B The amplitude is too small.

C The frequency is too high.

D The frequency is too low.