# Sound

## Question Paper

| | |
|---|---|
| Course | CIE IGCSE Physics |
| Section | 3. Waves |
| Topic | Sound |
| Difficulty | Hard |

**Time Allowed** 10

**Score** /5

**Percentage** /100



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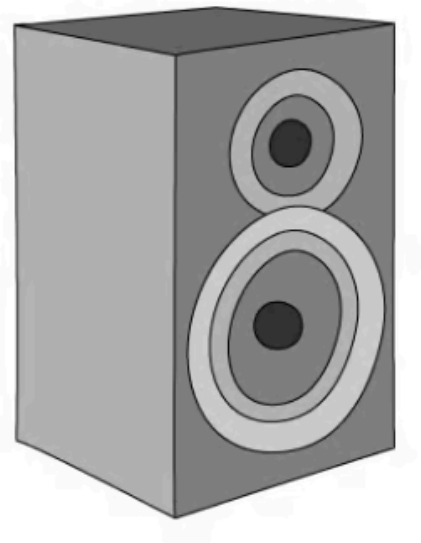
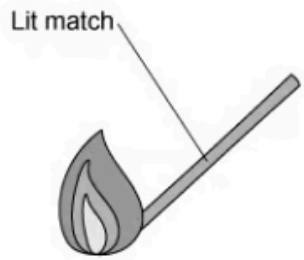
## Question 1

In a common secondary school demonstration, a speaker is placed next to a lighted match.






A loud sound wave is played through the speaker, causing the flame to vibrate.

What type of wave is emitted from the speaker, and in which direction does the flame vibrate?

| | wave type | direction of vibration |
|---|---|---|
| **A** | transverse | ↔ |
| **B** | longitudinal | ↔ |
| **C** | transverse | ↕ |
| **D** | longitudinal | ↕ |

**[1 mark]**



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## Question 2

**Extended tier only**

A fishing boat uses sonar to locate a shoal of fish. The sonar system sends a pulse of sound towards the shoal. When it hits the shoal, the sound wave is reflected and picked up by a detector underneath the ship.

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

The pulse of sound waves is received 0.48 s after it is emitted.

How far from the boat is the shoal of fish?

**A.** 1563 m

**B.** 3125 m

**C.** 720 m

**D.** 360 m

**[1 mark]**

## Question 3

In the olympic 100 m sprint final, a starting pistol is used to tell the sprinters when to start.

A spectator, sitting in the viewing area 300 m away sees the smoke from the pistol 0.86 s before hearing the bang. The spectator has exceptionally keen reactions and a very accurate internal clock.

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

**A.** 349 m/s

**B.** 330 m/s

**C.** 258 m/s

**D.** 698 m/s

**[1 mark]**



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## Question 4

A walker can see a cliff face some distance away, and wants to estimate how far away it is.

He makes a loud noise, and times how long it takes the echo to come back. It takes 1.8 s.

If the speed of sound is 345 m/s, how far away is the cliff?

**A.** 192 m

**B.** 96 m

**C.** 621 m

**D.** 311 m

**[1 mark]**

## Question 5

Ultrasound is high-pitched and cannot usually be heard by human ears. However, ultrasound does have many uses.

Which statement, or statements, in the list below are correct uses of ultrasound?

1. Testing materials to find breaks or other damage
2. Medical scanning of organs and soft tissues
3. Radar systems to find distance and velocity

**A.** 1 only

**B.** 1 and 2

**C.** 2 and 3

**D.** 1, 2 and 3

**[1 mark]**



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