

Propagation of Sound Waves

Chapter 8: Propagation of Sound Waves · Topic 1

Key Concept

Sound waves are longitudinal, meaning particles vibrate parallel to the direction the wave travels, creating compressions (dense regions) and rarefactions (sparse regions).

Sound cannot travel through a vacuum since it requires a medium (solid, liquid, or gas) with particles to transmit vibrations.

The speed of sound varies by medium and temperature, travelling faster in solids than liquids, and faster in liquids than gases.

Understanding sound wave propagation explains phenomena like echoes, the Doppler effect, and how we hear sounds from different sources.

Quick Revision Notes

- Sound waves are longitudinal.
- Particles vibrate parallel to wave direction.
- This creates compressions and rarefactions.
- Sound needs a medium to travel.
- It cannot travel through a vacuum.
- Speed varies: fastest in solids, slowest in gases.
- This explains echoes and the Doppler effect.
- It also explains how we hear different sounds.

Practice Questions

- 1 Discuss compressions and rarefactions in sound waves.
- 2 Explain why sound can't travel in a vacuum.
- 3 Research why sound travels faster in solids.
- 4 Discuss the Doppler effect with an example.
- 5 Research how an echo forms.
- 6 Explain longitudinal waves in your own words.