

Very Short Answer Questions

Q. 1. Lightning can be seen the moment it occurs. Paheli observes lightning in her area. She hears the sound 5 s after she observed lightning. How far is she from the place where lightning occurs? (Speed of sound = 330 m/s). [NCERT Exemplar]

Ans. Distance = $330 \text{ m/s} \times 5 \text{ s}$
= 1650 m

Q. 2. Does any part of our body vibrate when we speak? Name the part. [NCERT Exemplar]

Ans. Yes, larynx (vocal cords).

Q. 3. Boojho saw a cracker burst at night at a distance from his house. He heard the sound of the cracker a little later after seeing the cracker burst. Give reason for the delay in hearing the sound. [NCERT Exemplar]

Ans. The speed of sound is lower than that of the speed of light and therefore sound reaches him later than light.

Q. 4. When we hear a sound, does any part of our body vibrate? Name the part. [NCERT Exemplar]

Ans. Yes, eardrum.

Q. 5. Name two musical instruments which produce sound by vibrating strings? [NCERT Exemplar]

Ans. Sitar and Ektara (any other musical instruments which produces sound by a vibrating string)

Q. 6. Define vibration.

Ans. The to and fro or back and forth motion of an object is termed as vibration.

Q. 7. Why the voices of men, women and children are different?

Ans. The vocal cords in men are about 20 mm long. In women these are about 5 mm shorter. Children have very short vocal cords. This is the reason why the voices of men, women and children are different.

Q. 8. Name two important properties of sound.

Ans. Amplitude and frequency.

Short Answer Questions

Q. 1. A simple pendulum makes 10 oscillations in 20 seconds. What is the time period and frequency of its oscillation? [NCERT Exemplar]

Ans.

$$\text{Time period} = \frac{20}{10} = 2 \text{ s}$$

$$\text{Frequency} = \frac{1}{2 \text{ s}} = 0.5 \text{ oscillations/s}$$

Q. 2. We have learnt that vibration is necessary for producing sound. Explain why the sound produced by every vibrating body cannot be heard by us. [NCERT Exemplar]

Ans. If the sound produced by a vibrating body is in the audible range, the sound produced will be heard by us otherwise we will not be able to hear the sound even though the body is vibrating.

Q. 3. Suppose a stick is struck against a frying pan in vacuum. Will the frying pan vibrate? Will we be able to hear the sound? Explain. [NCERT Exemplar]

Ans. The frying pan will vibrate. We will not be able to hear the sound of vibration because sound cannot travel in vacuum.

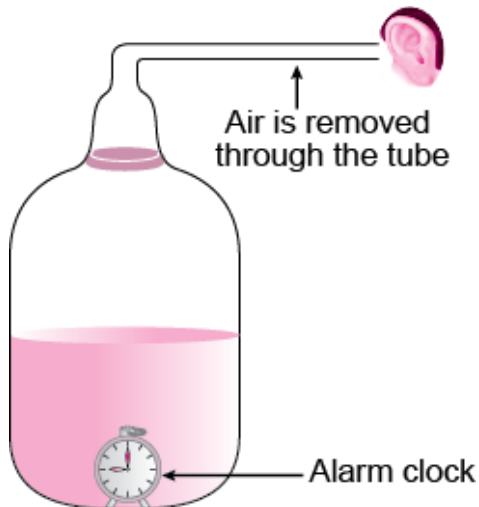
Q. 4. Two astronauts are floating close to each other in space. Can they talk to each other without using any special device? Give reasons. [NCERT Exemplar]

Ans. No, in space there is vacuum and sound cannot travel in vacuum.

Q. 5. Define frequency. What is its SI unit?

Ans. The number of oscillations per second is called the frequency of oscillation. Its SI unit is hertz (Hz).

Q. 6. An alarm bell is kept inside a vessel as shown in the figure below. A person standing close to it can distinctly hear the sound of alarm. Now if the air inside the vessel is removed completely how will the loudness of alarm get affected for the same person? [NCERT Exemplar]



Ans. The loudness of the sound will decrease as the air is removed slowly from the plastic bottle. If the air in the plastic bottle is removed completely, there is vacuum in the bottle. The sound cannot travel through vacuum and we cannot hear the sound of the alarm clock at all.

Q. 7. We have a stringed musical instrument. The string is plucked in the middle first with a force of greater magnitude and then with a force of smaller magnitude. In which case would the instrument produce a louder sound? [NCERT Exemplar]

Ans. The loudness of sound depends upon the amplitude of vibration. The amplitude of string is larger when it is plucked with greater force and hence the sound will be louder in that case.

Long Answer Questions

Q. 1. How is sound produced and how is it transmitted and heard by us? [NCERT Exemplar]

Ans. Sound is produced due to the to and fro or back and forth motion of an object known as vibration. When a tightly stretched band is plucked, it produces sound. When it stops vibrating, it does not produce sound.

Sound waves enter the ears and travel down a canal at the end of which is a thin, tightly stretched membrane called eardrum. As the sound wave strikes the eardrum, it vibrates and the vibrations reach the inner ear which sends signals to the brain. The brain interprets the signals and we hear the sound.

Q. 2. Suggest four measures to limit noise pollution in your locality. [NCERT Exemplar]

- Ans. a.** Trees must be planted along the roads and around the buildings.
- b.** Use of horns should be minimised.
- c.** Silencers must be installed in transport vehicles and industrial machines.
- d.** TV and music systems should be run at low volumes.

Hots (Higher Order Thinking Skills)

Q. 1. The Town hall building is situated close to Boojho's house. There is a clock on the top of the Town hall building which rings the bell every hour. Boojho has noticed that the sound of the clock appears to be much clearer at night. Explain. [NCERT Exemplar]

Ans. The noise level is quite low at night. Therefore, the sound of the clock appears much clearer at night than in the day.

Q. 2. If there is an explosion on the moon, would it be heard on the earth?

Ans. No, explosion on the moon will not be heard on the earth because the space between earth and moon is vacuum and sound cannot travel through vacuum.