

Sound

Q.1 Choose the correct answer. Sound can travel through

(a) gases only	(b) solids only
(b) liquids only	(d) solids, liquids and gases.

Sol: (d) solids, liquids and gases.

Q.2 Which of the following voices is likely to have minimum frequency?

(a) Baby girl	(b) Baby boy
(b) A man	(d) A woman

Sol: (b) A man

Q.3 In the following statements, tick 'T' against those which are true, and 'F' against those which are false.

(a) Sound cannot travel in vacuum.	(T/F)
(b) The number of oscillations per second of a vibrating object is called its time period.	(T/F)
(c) If the amplitude of vibration is large, sound is feeble.	(T/F)
(d) For human ears, the audible range is 20 Hz to 20,000 Hz.	(T/F)
(e) The lower the frequency of vibration, the higher is the pitch.	(T/F)
(f) Unwanted or unpleasant sound is termed as music.	(T/F)
(g) Noise pollution may cause partial hearing impairment.	(T/F)

Sol:

(a) Sound cannot travel in vacuum.	(T)
(b) The number of oscillations per second of a vibrating object is called its time period.	(F)
(c) If the amplitude of vibration is large, sound is feeble.	(F)
(d) For human ears, the audible range is 20 Hz to 20,000 Hz.	(T)
(e) The lower the frequency of vibration, the higher is the pitch.	(F)
(f) Unwanted or unpleasant sound is termed as music.	(F)
(g) Noise pollution may cause partial hearing impairment.	(T)

Q.4 Fill in the blanks with suitable words.

- Time taken by an object to complete one oscillation is called _____.
- Loudness is determined by the _____ of vibration.
- The unit of frequency is _____.
- Unwanted sound is called _____.
- Shrillness of a sound is determined by the _____ of vibration.

Sol:

- Time taken by an object to complete one oscillation is called **Time period**.
- Loudness is determined by the **Amplitude** of vibration.
- The unit of frequency is **Hertz (Hz)**.
- Unwanted sound is called **Noise**.
- Shrillness of a sound is determined by the **Frequency** of vibration.

Q.5 A pendulum oscillates 40 times in 4 seconds. Find its time period and frequency.

Sol: Given: No of oscillation = 40

Time = 4s

Time period = Time / no. of oscillation

$$= 4/40$$

$$= 0.1 \text{ s}$$

Frequency = No. of oscillation / time

$$= 40/4 = 10 \text{ Hz}$$

Q.6 The sound from a mosquito is produced when it vibrates its wings at an average rate of 500 vibrations per second. What is the time period of the vibration?

Sol: Given: No of vibration = 500 vibration per second

Time period = time / no. of vibration

$$= 1/500 = 0.002 \text{ s}$$

Q.7 Identify the part which vibrates to produce sound in the following instruments.

(a) Dholak

(b) Sitar

(c) Flute

Sol:

(a) Dholak - Stretched membrane

(b) Sitar - strings.

(c) Flute- Air column

Q.8 What is the difference between noise and music? Can music become noise sometimes?

Sol: The sound which is unpleasant to listen is known as noise. It is a result of irregular vibrations. While Music is a sound which is pleasant to listen. Yes, music can sometimes become noise.

Example: Playing songs on loudspeakers at a high volume becomes noise.

Q.9 List sources of noise pollution in your surroundings.

Sol: The major sources of noise pollution are:

- (i) Sounds of vehicles in traffic.
- (ii) Sounds of bursting of crackers and explosives on Diwali or marriage.
- (iii) Sounds of loudspeaker, TVs, transistors.
- (iv) Sound of mixer grinder in kitchen.
- (v) Sound of desert coolers.
- (vi) Sound of construction of places.

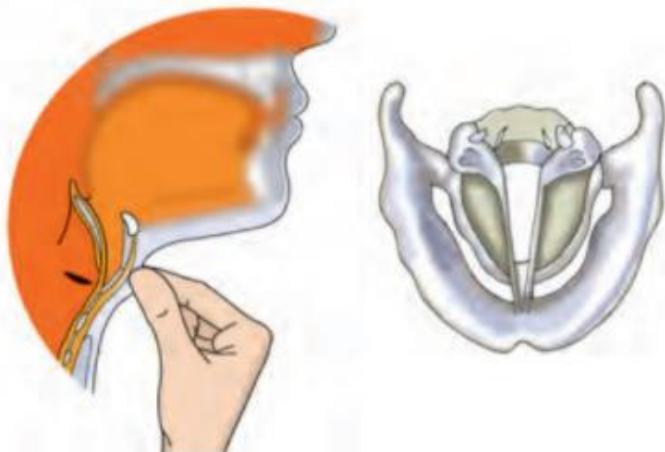
Q.10 Explain in what way noise pollution is harmful to humans.

Sol: Noise pollution is very harmful to humans. Noise pollution causes insomnia, hypertension, Anxiety and may even lead to loss of hearing.

Q.11 Your parents are going to buy a house. They have been offered one on the roadside and another three lanes away from the roadside. Which house would you suggest your parents should buy? Explain your answer.

Sol: We would suggest our parents to buy the house which is three lanes away from the roadside because in the house on the roadside will be more noise coming from the sound of vehicles.

Q.12 Sketch larynx and explain its function in your own words.



Sol:
Larynx or voice box is a part of the throat. It consists of two stretched membranes called vocal chord with some gap between them. As air passes through this gap, the membranes or vocal cords vibrate and produce sound. So, it is also known as sound box.

Q.13 Lightning and thunder take place in the sky at the same time and at the same distance from us. Lightning is seen earlier and thunder is heard later. Can you explain why?

Sol: Lightning and thunder take place in the sky at the same time and at the same distance from us. Lightning is seen earlier and thunder is heard later. Because speed of light is much more than speed of sound. Due to high speed to light, it reaches to us before the sound.