

## CBSE NCERT Solutions for Class 8 Science Chapter 13

### Back of Chapter Questions

1. Choose the correct answer. Sound can travel through

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

**Solution:(D)**

Sound is a mechanical wave, which requires a medium to travel. It can travel through solids liquids and gases.

2. Voice of which of the following is likely to have a minimum frequency?

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

**Solution:(C)**

Voice of an adult man is of lower pitch in compared to a baby girl or boy and a woman.

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)

**Solution:**

- (a) True

Sound wave is a mechanical wave, which requires medium to propagate.

- (b) False

Time taken to complete one oscillation is called time period, whereas number of oscillations per second of the vibrating object is called its frequency.

(c) False

Sound is feeble for small amplitudes.

(d) True

The audible frequency range for human ears is 20 Hz to 20,000 Hz.

(e) False

Pitch increases with the frequency of vibration.

(f) False

Unwanted or unpleasant sound is termed as noise.

(g) True

A person who is exposed to a loud sound continuously may get temporary or even permanent impairment of hearing

4. Fill in the blanks with suitable words.

(a) Time taken by an object to complete one oscillation is called \_\_\_\_\_.

(b) Loudness is determined by the \_\_\_\_\_ of vibration.

(c) The unit of frequency is \_\_\_\_\_.

(d) Unwanted sound is called \_\_\_\_\_.

(e) Shrillness of a sound is determined by the \_\_\_\_\_ of vibration

**Solution:**

(a) time period

Time taken to complete one oscillation is called time period

(b) amplitude

The loudness of a sound is determined by the amplitude of its vibration

(c) hertz (Hz)

The SI unit of frequency is hertz (Hz)

(d) noise

Unwanted sound is called noise

(e) frequency

Shrillness or pitch of a sound is determined by the frequency of vibration.

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

**Solution:**

Given,

The number of oscillations = 40

Time taken for 40 Oscillations  $t = 4$  s

Time period is defined as the time taken to complete one oscillation

$$\Rightarrow \text{Time period } T = \frac{\text{total time}}{\text{number of oscillations}} = \frac{4 \text{ s}}{40} = 0.1 \text{ s}$$

Frequency is defined as the number of oscillations per second

$$\text{Frequency } f = \frac{\text{number of oscillations}}{\text{Total time}} = \frac{40}{4} = 10 \text{ Hz}$$

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?

**Solution:**

Number of vibrations per second = 500

$$\text{Time taken for one vibration or time period } T = \frac{\text{total time}}{\text{Total number of vibrations}} = \frac{1}{500} = 0.002 \text{ s}$$

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

- (a) Dholak
- (b) Sitar
- (c) Flute

**Solution:**

- (a) Dholak: Dholak is a very popular folk drum of northern India. Vibrations of stretched membrane in it produce sound.
- (b) Sitar: Sitar is an Indian stringed instrument. Vibrations of stretched strings in it produce sound.
- (c) Flute: Flute is an air-based musical instrument. When air is pumped into a flute, it vibrates inside the flute and produces sound.

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

**Solution:**

Sounds which are unpleasant to hear are called as noise whereas sounds that are pleasant to hear are called as music. Music becomes noise when played at high volumes.

Examples of music: Sound produced from musical instruments such as flute dholak, sitar when a musician play them.

Examples of noise: Sounds produced from construction area, sounds produced by horns of vehicles.

9. List sources of noise pollution in your surroundings.

**Solution:**

Few sources of noise pollution are Sounds of vehicles, explosions including the bursting of crackers, machines, loudspeakers television and transistor radio at high volumes, some kitchen appliances, desert coolers, air conditioners.

10. Explain in what way noise pollution is harmful to human.

**Solution:**

Continuous exposure of noise pollution causes many health problems like lack of sleep, hypertension (high blood pressure), anxiety. A person who is exposed to loud sound continuously may get temporary or even permanent impairment of hearing.

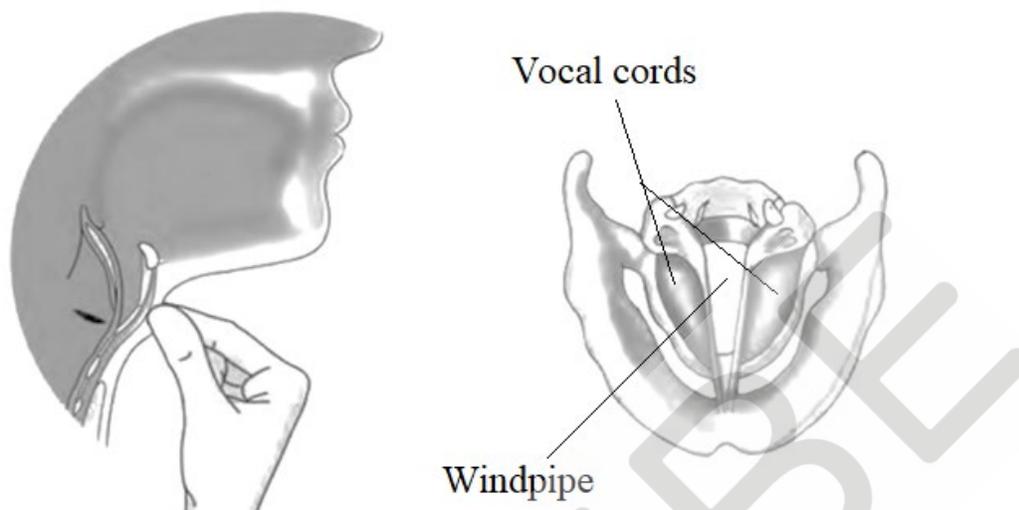
11. Your parents are going to buy a house. They have been offered one on the roadside and another three lanes away from the roadside. Which house would you suggest your parents should buy? Explain your answer.

**Solution:**

I would suggest my parents to buy the house which is three lanes away from the roadside. This is because being away from road side reduces the noise pollution caused by vehicles on the road.

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

**Solution:**



In humans, the sound is produced by the voice box or the larynx. It is at the upper end of the windpipe. Two vocal cords are stretched across the voice box or larynx in such a way that it leaves a narrow slit between them for the passage of air. When the lungs force air through the slit, the vocal cords vibrate, producing sound. Muscles attached to the vocal cords can make the cords tight or loose. When the vocal cords are tight and thin, the type or quality of voice is different from that when they are loose and thick.

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?

**Solution:**

Speed of light is very much greater than the speed of sound in the air. Due to this reason lightening is seen earlier and thunder is heard later.