Sound



1. Choose the correct answer. Sound can travel through

- a). gases only
- b). solids only

c). liquids only

d). solids, liquids and gases.

Ans: (d) solids, liquids and gases.

Sound can travel in any medium.

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

frequency?a). Baby girl

b). Baby boy

c). A man

d). A woman

Ans: (c) A man

Frequency of a sound is directly proportional to pitch. Here, the pitch of a man is minimum.

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.Ans: T

Vacuum is an enclosed place in which there are no molecules or matter. Therefore, sound cannot travel through vacuum where there is no molecule or atom to induce vibrations.

b). The number of oscillations per second of a vibrating object is called its time period.

Ans: F

The number of oscillations per second of a vibrating object is known as its frequency.

c). If the amplitude of vibration is large, sound is feeble.

Ans: F

Sound is feeble for small amplitude.

d). For human ears, the audible range is 20 Hz to 20,000Hz.

Ans: T

For human ears, the audible range is 20 Hz to 20,000Hz.

e). The lower the frequency of vibration, the higher is the pitch. Ans: F

The pitch of a sound is proportional to its frequency. As the frequency of vibration increases, the pitch of the sound also increases and vice versa.

f). Unwanted or unpleasant sound is termed as music.

Ans: F

Unwanted or unpleasant sounds are known as noise.

g). Noise pollution may cause partial hearing impairment.

Ans: T

If one is subjected to loud unpleasant sound continuously for a long time, then it may cause temporary hearing impairment.

4. Fill in the blanks with suitable words.

a). Time taken by an object to complete one oscillation is called ______. Ans: Time taken by an object to complete one oscillation is called time period.

b). Loudness is determined by the of vibration.

Ans: Loudness is determined by the <u>amplitude</u> of vibration.

c). The unit of frequency is _____. Ans: The unit of frequency is <u>hertz (Hz).</u>

d). Unwanted sound is called _____. Ans: Unwanted sound is called noise.

e). Shrillness of a sound is determined by the ______ of vibration. Ans: Shrillness 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.

Ans: Time period is defined as the time required to complete one oscillation. Frequency is defined as the number of oscillations per unit time.

Here, Time t = 4s Number of oscillations n = 40 Frequency $f = \frac{n}{t}$ Thus, $f = \frac{40}{4}$ $\therefore f = 10$ Hz Time period is the inverse of frequency of an object. Therefore, $T = \frac{1}{f}$ $T = \frac{1}{10}$ $\therefore T = 0.1s$

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

Ans: Time period is the inverse of frequency of an object.

Therefore, $T = \frac{1}{\text{frequency}}$ $T = \frac{1}{500}$ $\therefore T = 0.002 \text{s}$

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

a). Dholak

Ans: Dholak has stretched membranes called head that vibrate to produce sound.

b). Sitar

Ans: In sitar, the stretched strings are plucked and when they vibrate, they produce sound.

c). Flute

Ans: In flute, the air column inside it vibrates when blown which produces sound.

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

Ans: Noise is an unpleasant sound which is a result of irregular vibrations. Music is a sound which is pleasant to hear. Yes, music can sometimes become noise when it is played at very high volumes on loudspeakers.

9. List sources of noise pollution in your surroundings.

Ans: Following are the major sources of noise pollution:

- i. Sounds of vehicle horns.
- ii. Explosions that include bursting of crackers and explosives.
- iii. Sounds of machines and loudspeakers.
- iv. Sounds of television and transistor radio at high volumes.
- v. Sounds of kitchen appliances.

10. Explain in what way noise pollution is harmful to humAns:

Ans: Noise pollution is harmful to humans as it may cause many health-related problems; like insomnia, hypertension, headache, stress and may even lead to loss 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.

Ans: I would suggest that the house be three lanes away from the roadside because the house next to the roadside will be more noisy compared to the house three lanes away from the road.

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

Ans: Larynx is a part of the throat. It moves when we swallow something. There are two vocal cords inside the Larynx. The air passes through a small gap between them. The lungs force the air into the space when we speak and this vibrates the vocal cord, resulting in the production of sound. That is why larynx is also known as sound box.



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?

Ans: 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 greater than the speed of sound and therefore, light travels faster than thunder.

Extended Learning — Activities and Projects

1. visit the music room of your school you may also visit musicians in your locality make a list of musical instrument note down the parts of these instruments that vibratecto produce sound

Ans: There are membrane instruments like tabla , mridangam,drums which produce sound when the membrane is struck.

There are wind instruments like flute, trumpet, which produces sound by the vibrating air columns.

There are string instruments like violin, guitar which produces sound when the string is struck.

2. If you play a musical instrument ,bring it to the class and demonstrate how you play it

Ans: I play music with full of enjoyable.

Explanation:

If I would be in that situation I used to be very very happy in the world.

Do you all know why am so exciting??? Because, I can show my musical talent to my friends and teachers in the class.

When I play music using with my own musical instruments i

3. Prepare a list of famous indian musicians and the instrument that they play (any8)

Ans: FluteFlute:-Hari Prasad Chaurasia Ghatam:-T.H. Vinayakaram Guitar:-Vishwamohan Bhatt, Jalegaonkar. Harmonium:-Jnan Prakash Ghosh Israj:-Alauddin Khan Jal Tarang;-Ram Swaroop Prabhakar Mandolin:-**U. Sriniwas** Mohan Veena:-Pt. Vishwa Mohan Bhatt Mridang:-Thakur Bhikam Singh, Palghat Raju. Nadaswaram:-Sheikh

4. Take a long thread. Place your hands over your ears and get someone to place this thread round your head and hands. Ask her to make the thread taut and hold its ends in one hand. Now ask her to draw her finger and thumb tightly along the thread. Can you hear a rolling sound like that of a thunder? Now repeat the activity while another. Mend stands near both of you. Can he hear any sound?



Ans: well.... you'll hear the rolling sound like thunders

Explanation:

this is because when you pull the thread it will make large number of vibration per second that's why you can hear the sound of thunder.

in same way, suppose if you losen the thread and try to pull it will make less number of vibrations

5. Make two toy telephones. Use them as shown in Fig. 13.20. Make sure that the two strings are taut and touch each other. Let one of you speak. Can the remaining three persons hear? See how many more friends you can engage in this way. Explain your observations.



Ans: Yes, the remaining three persons can also hear. As sound can travel through a medium, in this case sound is trave ling through the string and thus everyone on the toy telephone can hear the voice.

6. identify the sources of noise pollution in your locality. Discuss with your parents, friends and neighbours. Suggest how to control noise pollution. Prepare a brief report and present it in the class.

Ans: Sources of Noise pollution in our locality are

- 1. Vehicles.
- 2. Industries machine.
- 3. Crackers.
- 5. Airport (Aeroplane).

To control noise pollution we should do the following reason.

- 1. Using vehicles (petrol)
- 2. Silence in public places.
- 3. Minimizing the use of industries n factories.
- 4. Avoiding bursting