Sound

Improve your learning

Q. 1. Fill in the blanks with suitable words.

a) The to and fro motion of a body from its mean position is called ……..
b) Number of vibrations per second is called ……..
c) The intensity of sound can be measured in …….
d) Sound cannot travel in …….
e) Vibrating bodies produce ……
f) The maximum displacement of a body from its mean position is called ……..

Answer : (a) The to and fro motion of a body from its mean position is called One Vibration.

Explanation: Vibration is the disturbance created by some source for example human activity, due to which an object gets displaced forwards and backwards with respect to its initial position. A real life example of it is the vibration of a guitar string.

(b) Number of vibrations per second is called Frequency

Explanation: Frequency is nothing but the number of times an event is repeated in one second.

(c) The intensity of sound can be measured in dB (decibels).

Explanation: Decibels is the unit in which the numeric evaluation of sound is performed.

(d) Sound cannot travel in vacuum.

Explanation: Propagation of sound always requires a material medium and since in vacuum there is no material medium, sound cannot travel in vacuum.

(e) Vibrating bodies produce sound.

Explanation: For the production of sound a vibrating source is a must. For example, while playing guitar, the musical sound is produced due to the vibration of different strings.

(f) The maximum displacement of a body from its mean position is called amplitude.

Explanation: Amplitude is nothing but the farthest distance between an object's mean position and the displaced position.

Q. 2. A normal human being can listen to sounds with frequency from _____to _____ vibrations per sec.

Answer : A normal human being can listen to sounds with frequency from 20 To 20,000 vibrations per sec.

Explanation: Every living being can listen to a certain rang of sound only. For example, Dogs can hear the sound from 64 to 44,000 vibrations per second. Similarly, human ears can only perceive the sound from 20 to 20,000 vibrations per sec.

Q. 3. How will you differentiate the amplitude and frequency of different sounds? Give two suitable examples from your daily life.

Answer : Amplitude of different sound can be recognized on the basis of loudness of the sound. A loud enough sound is said to have greater amplitude in comparison to a feeble sound.

For example, sounds emanating from drums during the prayer of assembly in the school are very loud and hence of larger amplitude. But the sound produced while we are taking pledge in the assembly is a feeble sound and hence of smaller amplitude.

Frequency of different sound can be recognized on the basis of pitch of the sound, which is the measure of shrillness of the sound.

Higher the pitch of the sound higher is the frequency and vice versa.

For example, A bird makes high pitch sound and a lion makes low pitch roar. Similarly, in general the pitch of girls voice is higher than that of boys.

Q. 4. Write any three musical instruments that you know and explain how they produce sound.

Answer : Musical instruments and how they produce sound:

(a) **Guitar**: Sound is guitar is produced by vibration of string when plucked.

(b) **Drum**: Sound in drum is produced due to vibration of it's film when beaten.

(c) **Flute**: Sound in flute is produced due to the vibration of air molecules.

Q. 5. The sounds of crickets (insects) make us close our ears. Why?

Answer : The sound produced by crickets (insects) is very loud and of high pitch, which is not pleasant to our ears. So, in order to avoid this unpleasant sound, we have to close our ears.

Q. 6. Robert observed a musical instrument producing sound. But he didn't find any vibration of any part of that instrument. This observation raised many questions in his mind. Can you guess what are the questions raised in his mind? Write them.

Answer : The questions that must arise in his mind are:

(1) If there is no any source of vibration, then how is the sound being produced?

(2) Are there sounds which can be produced even without any vibrating source?

(3) What are the invisible source of vibrations causing production of sound?

Q. 7. "Vibrations in a body produce sounds". How do you prove it?

Answer : Vibrations in a body produce sounds. This can be proved by the following activities:

(a) We Take a brass bell. Ring the bell and listen to the sound carefully. Also, if we gently touch the bell, we feel the vibrations in the bell. Now we hold the bell tightly with hand and ring it again. In this case we feel no vibration and no clear and loud sound.

(b) We Fix a rubber band tightly on an empty matchbox. Now we Pluck the rubber band and keep it close to our ear. We clearly hear some sound coming out of it. Also, as soon as band stops vibrating sound also vanishes.

(c) Blow air into papers of our notebook. By doing so we observe that air makes its way through pages of the notebook, resulting due to the vibrations produced due to blowing air and we hear some papery sound.

The above-mentioned activity clearly shows that vibration is always associated with the production of sound and as soon as the vibration stops the production of sound also stops simultaneously. Hence it proves that Vibrations in a body produce sounds.

Q. 8. Can parrots speak? Discuss with your friends and collect information.

Answer : Yes, of course!

Everyone must have a direct or indirect experience with talking parrots. In indirect ways we have seen talking parrots in some movies. Parrots are special bird species which can learn and mimic human speech.

Q. 9. Collect the photographs of local musicians and exhibit them in your class.

Answer : Self-doing job. (Collect the photographs of musician of your area and exhibit them in your class.)

Q. 10. Collect photographs showing various situations of sound pollution and prepare a scrap book.

Answer : Self-doing job. (Collect the required photographs and make a scrap book.)

Q. 11. Zakir said "vibrations produce sound. And sound produces vibrations. This is how we hear every sound". Establish that the given statement is true with relevant examples from your surroundings.

Answer : Vibrations produce sound. This statement is true as we can observe it from our surroundings, some of which are listed here:

a) School bell produces sound due to the vibration set in the bell on striking it with hammer.

b) Guitar produce pleasant sound due the vibrations set into the string when plucked.

c) We produce sound while talking, singing etc. this is due to the vibrations set in our voice box in the throat.

Also, sound can produce vibrations in objects. Some examples are as listed below:

a) We have seen windows in our home vibrating when a jet-plane is flying nearby. The vibration in window is caused by the sound coming from the airplane.

b) We feel some vibration in our body when we are very near to a very loud DJ. The vibration in window is caused by the sound coming from the sound boxes of DJ.

Therefore, we conclude Zakir's statement to be true.

Q. 12. Explain why we are not able to hear the explosions taking place in the sun.

Answer : We know that the propagation of sound requires a material medium for its propagation. And we also know that there is no continuous material medium between sun and earth. Hence sound cannot travel from sun to earth. That's why we are not able to hear the explosions taking place in the sun.

Q. 13.Write any two slogans to reduce sound pollution.

Answer : The two beautiful slogans to reduce sound pollution are:

I. Keep the noise down or the noise will keep you down.

II. The louder you Honk. Faster your health will conk.

Q. 14. Write your suggestions about reducing sound pollution.

Answer : Following steps can be taken to check the noise pollution:

a) Administration can instruct the DJs not to keep the loudness very high.

b) Using good quality oil or lubricant in large scale industries where many giant machines run producing very irritating noises.

c) As city and town suffer most from sound pollution. Hence, instructing heavy vehicles to not blow loud horn in city and town area. Also, attaching silencers in vehicles will result in less sound pollution.

d) Plant trees to reduce sound pollution. Planting trees and shrubs between the home reduce noise levels, both people noise and traffic noise.

Q. 15. How does sound pollution effect Bio diversity? Explain.

Answer : Sound pollution has harmful impacts on human and animal lives, some of which are as given below:

(a) Unwanted sound (noise) can damage psychological health, can cause hypertension, high stress levels, hearing loss, sleep disturbances, and other harmful effects.

(b) Unwanted noise can lead to abnormal behavior of animals.

(c) Noise pollution can cause disbalance in the distribution of animal species in the noise polluted area. Also, it can lead to death of animals.

(d) Some animals which are already endangered may get extinct due to the unwanted noise pollution.