Chapter 13 Sound class 08 Book Science Mission Question Answer

A. Multiple choice questions.

1. Maximum distance a pendulum travels on either side from '0' point is

(a) Amplitude (b) Time period (c) Frequency (d) Vibration

2. Time taken by a pendulum for completing 1 oscillation is (a) Amplitude (b) Time period (c) Frequency (d) Vibration

3. Number of oscillations per second is the (a) Amplitude (b) Time period (c) Frequency (d) Wave length

4. Speed of sound in air is (a) 332 m/s (b) 1500 m/s (c) 400 m/s (d) 5000 m/s

5. Which of the following level of sound is noise (a) 20 dB (b) 40 dB (c) 80 dB (d) 100 dB

6. Sound can travel through (a) Solids (b) Liquids (c) Air (d) All of these

7. Which of the following is not a string instrument (a) Piano (b) Violin (c) Harmonium (d) Ektaara

8. The animal capable of hearing infrasound is (a) Man (b) Rhinoceros (c) Cows (d) Camel

9. To change loud sound to feeble sound we decrease its (a) Amplitude (b) Frequency (c) Speed (d) All of these

10. The vocal cords in human produce sound by vibrating (a) Air column (b) Strings (c) Membranes (d) Plates

Ans: 1. a 2. b 3. c 4. a 5. D 6. d 7. c 8. b 9. a 10. c

B. Match the following:

Column 'A'	Ans	Column 'B'
1. Sound below the frequency of 20 Hz.	1.c	a. dB
2. Velocity of sound in water.	2. e	b. Time period
3. Sound travels through it at the speed of more than 4800 m/s.	3. d	c. Infrasound
4. One oscillation per second.	4. b	d. Metal (solid)
5. Unit of measuring loudness of sound.	5. a	e. 1500 m/s

C. Fill in the blanks.

1. Sound travels through a …….. 2. Sound cannot propagate through ……

3. Maximum displacement of a pendulum on either side from a 'zero point' is ……

4. Human throat produces sound through ……

5. Sound below …… decibel is inaudible sound for human beings.

6. Sound above …… decibel is inaudible sound for human ears.

7. The shrillness of sound depends on ……. 8. The unpleasant and irritating sounds create ……

9. Too much and regular noise may cause hearing ……

10. Time period is the time taken by a pendulum to complete ..... oscillation.

Ans: 1. medium 2. vacuum 3. amplitude 4. membranes 5. 20 Hz 6. 20000 Hz 7. pitch 8. noise 9. loss 10. one

D. State whether 'true' or 'false'.

1. Sound travels faster through air than in solids. 2. Loudness of sound depends upon its amplitude.

3. Sound can travel through vacuum. 4. Human ear can hear all frequencies of sound.

5. Bats can hear ultrasound. 6. Harmonium is a percussion musical. instrument.

7. Lower the frequency of vibrations higher is its pitch.

Ans: 1. False 2. True 3. False 4. false 5. True 6. False 7. False

E. Give one word answers.

1. Sensation of hearing. 2. To-and-fro motion of a body around its mean position.

3. Maximum displacement of a vibrating body from its mean position.

4. Number of vibrations completed per second. 5. Unit for frequency.

6. Unit in which loudness is expressed. 7. What determines the loudness of sound?

Ans: 1. Sound 2. Vibration 3. amplitude 4. Frequency 5. Hertz 6. decibel 7. Amplitude

Theoretical Questions

A. Short answer type questions.

1. How sound is produced? Ans: Sound is produced by the vibration of the objects.

2. Name the two factors on which the loudness of sound depends.

Ans: Loudness of sound depends upon the amplitude. Larger the amplitude louder is the sound produced.

3. How is musical sound different from noise?

Ans: Musical sound is medium pitched sound produced by regular vibrations. Objects producing irregular vibrations produce noise.

4. What is the range of audible sound?

Ans: The range of audible sound is 20 Hz to 20000 kHz.

5. Even a rough thud can become music. How?

Ans: Rough low sound produced by beating a piece of wood at regular interval of time produce frequency of sound which is pleasant to hear.

6. How much is the amplitude of an oscillating body? Explain it with the help of an illustration.

Ans: The maximum displacement of a vibrating body from its rest position is called the amplitude of an oscillating body.

7. Approximately how much time sound takes to travel a distance of 1km?

Ans: The speed of sound in air is about 330 m/s that way it will take 3 seconds for sound to travel 1 km.

B. Long answer type questions.

1. What is expressed by the following term in relation to sound?

a. Amplitude : The maximum displacement of a vibrating body from its rest position is called amplitude .

b. Time period : The time taken by a pendulum for completing one oscillation

c. Frequency : The number of oscillations made by an object in one second. S.I. unit of frequency is Hertz (Hz).

d. Infrasonic : Sound having frequency below 20 Hz is called infrasonic

e. Ultrasonic : Sound with a frequency of more than 20,000 Hz is called ultrasound.

2. Differentiate between:

a. Noise and music. Ans: Musical sound is the sound produced by regular vibrations and it is pleasant to hear. eg sound produced by guitar. Noise is a sound produced by irregular vibrations . it is unpleasant to hear. Eg sound produced when sleel plate fall on floor.

d. Piano and Harmonium. Ans: Piano is a keyboard musical instrument. It is an example of stringed instrument. Each key is linked with a hammer which strikes the metallic string inside through a lever system.

Harmonium is a keyboard wind instrument in which air is blown by a ‘sheet blower’ at the back of the instrument and on pressing a key air escapes out of the pore under the key, producing sound.

e. Sound producing organ in human beings and birds.

Ans: In human beings sound produced by vibration of vocal cords present in voice box.

Birds produce sound chirp with the help of ‘syrinx’, a special kind of voice box with a ring of cartilage placed at the end of wind pipe.

3. Comment upon: 'Higher the pitch, shriller is the sound'.

Ans: If the frequency of vibration is higher, we say that the sound is shrill and has a high pitch. On the other hand, if the sound is said to have a lower pitch then it has a lower frequency of vibration. A bird produces high pitch sound whereas roaring of a lion is a low pitch sound.

4. Explain giving reason that sound cannot travel through vacuum.

Ans: Sound propagates through air, solids and liquids. Sound travels in waves and the waves are produced by vibrating particles (molecules) in a medium. Hence, medium is essential for the propagation of sound. Sound does not travel in the absence of a medium, i.e. vacuum. The sounds you hear all the time is reaching you through air.

5. How sound is heard by man?

Ans: Pinna collect sound waves . Ear canal transfer sound wave to eardrum. Eardrum vibrate to increase the frequency of sound. In the middle ear three small bones (a) Hammer(b) Anvil and (c) Stirrup amplify the sound vibrations. In the inner ear , Cochlea convert sound wave into electrical impulses . Auditory nerve send impulses to brai. Thus brain interprets sound.

6. What is the significance of adding a sound box in musical instruments?

Ans: Sound box added in musical instruments to make a deep and clear sound

7. List the causes of noise pollution?

Ans: i. Sound from Automobiles. ii. Sound from machines in industrial areas. iii. Sound from Construction work iv. High volume from T.V., music system etc.

8. What is the harm from noise pollution?

Ans: i. Mental disturbance and distraction ii. Noise disrupts sleep and causes hypertension.

iii. Noise pollution cause high blood pressure iv. Loss of hearing:

9. How to reduce noise pollution?

Ans: i. limiting the use of horn in public area. ii. Shifting of industrial units away from residential area

iii. Restriction on the use of loudspeakers and bursting of crackers especially beyond 10 p.m.

iv. planting of trees which not only purifies air but also reduces noise pollution.

10. Explain how the frequency of sound increases with the decrease in the length of the vibrating column.

Ans: Blow air from your mouth over the mouth of an empty test tube keeping your lower lip on its side. This sets the air column in the test tube into vibrations producing 'hooter type' sound. This is low pitched sound. Now, pour some water in the tube and then blow. The sound gets shrill.

Add more water and blow again. Sound produced gets shriller. This shows the frequency of the vibrating air column increases with the decreasing length of the air column inside the tube. (Adding water decreases the length of the air column inside the tube). A stage may come when the length of the air column if reduced further sound is not produced. This is the point of highest pitch.

11. Why in Jal-tarang each ceramic cup produces different sound when struck with a rod?

Ans: Jal-tarang includes minimum 8 ceramic cups of equal size filled with with variable amount of water in each cup. when cups struck with a piece of wooden rod produce sound of different frequencies.

12. Why while blowing across the mouth of a partially water filled bottle you hear different sounds depending upon the level of the water in the bottle?

Ans: when we blow air in the air column vibrates to producing low pitched sound. Now, pour some water in the tube and then blow. The sound gets shrill. This shows the frequency of the vibrating air column increases with the decreasing length of the air column inside the tube.

13. What is the time period of a pendulum which oscillates 20 times in 2 seconds?

Ans: a pendulum oscillates 20 times in 2 seconds so, frequency = 20/2 = 10 HZ , Time period = 1/f = 1/10= 0.1 sec.

14. Why do sound travel faster through solids than through air?

Ans: Sound travels faster and travels a longer distance through solids than in air because the molecules in solids are more tightly packed together than they are in air.