Sound

Check point 1

Q. 1. Write the name of two musical instruments.

Answer: The names of two musical instruments are veena and flute.

Q. 2. Name the vibrating part of Veena and flute.

Answer: The vibrating parts of Veena and flute are stretched string and air column respectively.

Q. 3. Name two musical instruments which produce sound by simple beaten.

Answer: Two musical instruments which produce sound by simple beaten are manjira and ghatam.

Check point 2

Q. 1. Name the part of the body which produces sound (voice).

Answer: The part of the body which produces sound is the voice box or larynx.

Q. 2. Mention the position of muscles of vocal cord when we are not speaking.

Answer: The position of muscles of vocal cord when we are not speaking is loose and relaxed.

Q. 3. Whether sound can travel without medium?

Answer: No, sound cannot travel without medium.

Q. 4. Explain the reason of not putting the sharp or pointed things into the ear.

Answer: If sharp or pointed things are put into the ear it can damage the eardrum inside our ear. This can make us deaf.

Q. 5. In toy telephone the sound travels through which medium?

Answer: In toy telephone the sound travels through the string i.e. a solid medium.

Check point 3

Q. 1. State the SI unit in which the loudness of sound is measured.

Answer: The SI unit in which the loudness of sound is measured is decibel (dB).

Q. 2. State the relation between time period and frequency.

Answer: The time period (T) and the frequency (f) are inversely proportional to each other $T \propto \frac{1}{f}$

Q. 3. Name the characteristic property of sound through which we can differentiate between the sound of male and female.

Answer: The shrillness of sound is the characteristic property of sound which differentiates the sound between male and female. Usually, the voice of a woman has higher frequency and shriller than the voice of a man.

Check point 4

Q. 1. Mention the range of audible sound of us.

Answer: The range of audible sound is from 20 Hz to 20000 Hz or 20 kHz.

Q. 2. Mention the reason behind the creation of noise.

Answer: The reason behind the creation of noise is vibrating objects.

Q. 3. We should plant trees along roadside. Explain why.

Answer: Planting trees along roadside is helpful because

1. Plants reduce noise pollution.

2. Plants reduce air pollution.

Q. 4. Explain in brief about hearing impairment.

Answer: Hearing impairment is the hearing defect of a person. Total hearing impairment is a problem usually from birth but partial hearing impairment is caused due to age, injury or illness.

Chapter Test

Q. 1. Explain how does a sound making object differ from one that is silent.

Answer: A sound making object is a vibrating object for which it can produce sound while a silent body is a non-vibrating object.

Q. 2. Mention the reason that brings the sound of fire crackers to our ears.

Answer: As a fire cracker explodes it produces a vibration in the air medium around it which is the reason we can hear a fire cracker exploding.

Q. 3. Mention the name of passage in the outer ear which carries sound waves to the eardrum.

Answer: The name of passage in the outer ear which carries sound waves to the eardrum is ear canal.

Q. 4. Sound can travel through vacuum. Is it correct?

Answer: No, sound cannot travel through vacuum as for propagation of sound it needs a medium.

Q. 5. What do you understand by amplitude of vibration?

Answer: Amplitude is defined as the loudness of sound. When the amplitude is large the sound produced is large and if the amplitude is small then the sound produced is also small.

Q. 6. Write the unit of loudness of sound.

Answer: The unit of loudness of sound is decibel (dB).

Q. 7. How much loudness can be tolerated by a normal human being?

Answer: Sound of loudness lower than 80 dB can be tolerated by a normal human being.

Q. 8. Cymbals (manjira) produces sound. Explain how.

Answer: Manjira consists of two metal discs that when struck against each other produces sound. When the two metal discs are struck against each other they vibrate and produce sound.

Q. 9. Differentiate infrasonic sounds and ultrasonic sounds.

Answer: Infrasonic sound is the sound with frequency lower than 20Hz but ultrasonic sound is the sound with frequency higher than 20000Hz or 20 kHz.

Q. 10. The moment we put our ear to the railway line, we can hear the sound of an approaching train even when the train is far off but its sound cannot be heard through the air. Why?

Answer: Sound propagates fastest in solid medium, so the sound of an approaching train can be heard even when the train is far off.

Q. 11. Thunder is heard after lighting. Give reasons.

Answer: Thunder is heard after lighting because lights travels much faster (3×10^8 m/s) than sound (about 330 m/s).

Q. 12. Why are the voices of men and women different?

Answer: The shrillness of sound is the characteristic property of sound which differentiates the sound between male and female. Usually the voice of a woman has higher frequency and shriller than the voice of a man.

Q. 13. How is musical sound differ from noise?

Answer: Musical sounds are those sounds which are pleasing to the ear while noise is those sounds which are unpleasant to the ear.

Q. 14. Write some harmful effects of noise pollution.

Answer: Some harmful effects of noise pollution are:

1. Lack of sleep
2. Hypertension
3. Anxiety
4. Temporary or even permanent loss of hearing.

Q. 15. Draw a labelled diagram of larynx and explain its functions.

Answer:

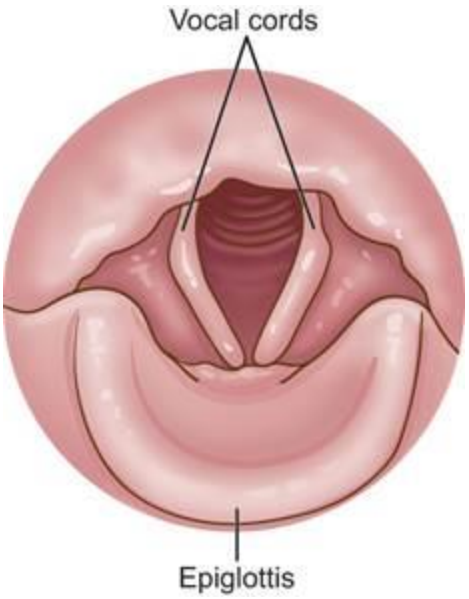

Fig. Labelled diagram of larynx

The larynx or the voice box produces sound. Two vocal cords are stretched across the larynx while leaving a small slit between them for the passage of air. When the lungs force air through the slit, the vocal cord vibrates and produces sound. The muscles attached to the vocal cord can make it tight or loose, if it is tight the sound produced is of high frequency and if it is loose then the sound produced is of low frequency.

Q. 16. Draw a neat labelled diagram of human ear and explain its working.

Answer:

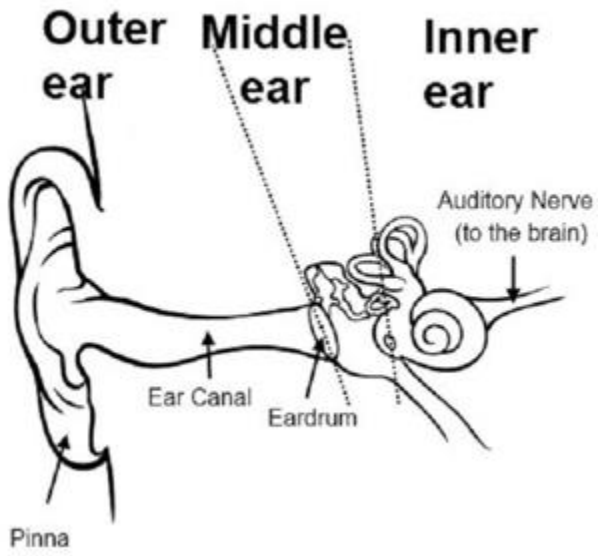

Fig. Labelled diagram of an ear

When the sound vibrations fall on the funnel shaped outer ear, the vibrations are transmitted through the ear canal to the eardrum which is a rubber membrane and vibrates when sound vibrations fall on it. Then the vibration goes to the inner ear from which it goes to the brain. This is how we hear.

Q. 17. Mention the frequency of sound produced when the vocal cords are (a) tight and thin, (b) loose and thick.

Answer: When the vocal cord is

a) Tight and thin: the sound produced is of high frequency or it is of high pitch.

b) Loose and thick: the sound produced is of low frequency or low pitch.

Q. 18. Define vibrations and frequency with examples.

Answer: When we prick a stretched rubber band, we can see the to and fro motion of the rubber band. This motion of the rubber band is known as vibration.

When the rubber band is vibrating, the number of small oscillating loops that the rubber band makes is defined as the frequency of the rubber band. The more the oscillating loops more is the frequency of the rubber band and vice versa.

Q. 19. Sound produced by a stretched wire is due to vibrations. Show by an activity.

Answer: Toy telephone works due to sounds produced by vibration of stretched wire. Toy telephone is a basic telephone made out of a long string and two paper or plastic cups. When a person speaks at one of the cups then the vibrations of sound produced by the stretched wire enables the other person to hear his voice successfully. Hence, we can conclude that sound produced by stretched wire is due to vibration.