1. Sound can travel through

    (a) gases only   (b) solids only

    (c) liquids only   (d) solids, liquids and gases.

Sol. (d)

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

    (a) Baby girl   (b) Baby boy

    (c) A man   (d) A woman

Sol. (b)

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)

Sol. (a) True   (b) False

    (c) False   (d) True

    (e) False   (f) False

    (g) True

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.

Sol. (a) time period   (b) amplitude

    (c) herts (Hz)   (d) noise

    (e) frequency

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

Sol. Given that,

Number of oscillation = 40

Total time taken = 4 seconds

Time period = Time taken in one oscillation

$$= \frac{\text{Total time}}{\text{Total number of oscillation}}$$

$$= \frac{4 \text{ seconds}}{40} = \frac{1}{10} \text{second}$$

= 0.1 second

Again, Frequency = Number of oscillations per second

$$= \frac{\text{Number of vibrations}}{\text{Time taken}}$$

$$= \frac{40}{4} \text{ second} = 10 \text{ per second}$$

= 10 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?

Sol. Number of vibrations per second = 500

Time period = Time taken for one vibration

$$= \frac{\text{Total time}}{\text{Number of vibration}} = \frac{1}{500} \text{Hz}$$

= 0.002 Hz

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

    (a) Dholak   (b) Sitar

    (c) Flute

Sol.   (a) Stretched membrane   (b) String of sitar

    (c) Air column

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

Sol. Unpleasant sounds are called noise whereas music is a sound, which produces pleasant sensation. But, if the musical sound is too loud, it becomes noise.

9. List sources of noise pollution in your surroundings.

Sol. Some of the major sources of noise pollution are:

   (i) Sounds of vehicles.

  (ii) Sounds of bursting of crackers and explosives.

 (iii) Sounds of loudspeaker, TVs, transistors.

 (iv) Sounds of kitchen appliances.

  (v) Sounds of desert coolers, air conditions etc.

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

Sol. Presence of excessive noise in the surroundings which are irritating and unacceptable, may cause many health related problems. For example, lack of sleep, hypertension, anxiety etc.

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.

Sol. I will suggest my parents to buy the house which is three lanes away from the roadside. This is because the house on the roadside will receive the unwanted sounds of vehicles whereas the house which is three lanes away from the roadsides will be free from noise pollution.

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

Sol.

Vocal cords

Trachea (Wind pipe)

Cartilage

Epiglottis
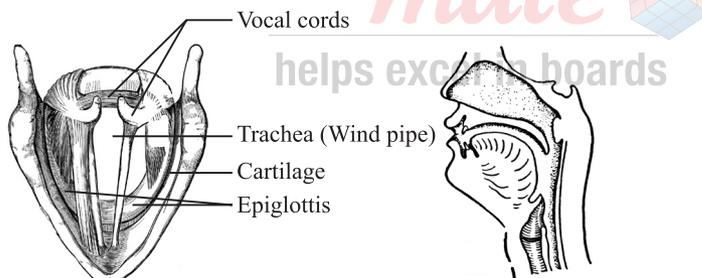
In humans, the sound is produced by the voice box or the larynx. It is situated in the throat. Below to it is the wind pipe. The two vocal cords, are stretched across the voice box or larynx in such away that it leaves a narrow slit between them for the passage of air when the lungs force air through the slit, the vocal cords vibrate and the vibration results in sound.

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?

Sol. Light travels at the speed of 3×10^8 m/s while sound travels at a speed of 332 m/s i.e., light travels much faster than sound that is why lightning is seen earlier and thunder is heard later.