



10. Sound

I. Assertion and Reasoning Type Questions:

Note: Mark the correct choice as.

OPTION A - Both assertion and reason are true and reason is the correct explanation of assertion.

OPTION B - Both assertion and reason are true but reason is not the correct explanation of assertion.

OPTION C - Assertion is true but reason is false.

OPTION D - Assertion is false but reason is true.

1. **ASSERTION:** If the frequency of vibration is higher we say that the sound is shrill and has a higher pitch.

REASON: The frequency determines the shrillness or pitch of a sound.

Ans - A

2. **ASSERTION:** The voices of children and adults are different in their voice.

REASON: This happens because the frequency of the voice of a child is lower than the adult.

Ans - C

II. Answer the following Questions:

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

No. of oscillation = 40

Total time is taken = 4 seconds

$$\begin{aligned}\text{Time period} &= \frac{\text{time}}{\text{number of oscillations}} \\ &= \frac{4 \text{ seconds}}{40} = \frac{1}{10} \text{ second} = 0.1 \text{ second.}\end{aligned}$$

$$\begin{aligned}\text{Frequency} &= \text{number of oscillations per second} \\ &= \frac{\text{number of oscillations}}{\text{time}} \\ &= \frac{40}{4} \text{ second} = 10 \text{ per second or } 10 \text{ Hz}\end{aligned}$$

2. **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?**

Number of vibrations per second = 500

$$\begin{aligned}\text{Time period} &= \frac{\text{time}}{\text{number of vibration}} \\ &= \frac{1}{500} = 0.002 \text{ second}\end{aligned}$$

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

(a) Dholak (b) Sitar (c) Flute

1. Stretched membrane
2. String of sitar
3. Air column

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

The type of sound which are unpleasant to listen is known as noise whereas music is a pleasant sound, which produces a sensation.

Yes, music can become noise when it's too loud.

5. **List sources of noise pollution in your surroundings.**

Following are the major sources of noise pollution:

- Sound of vehicles
- Sound of kitchen appliances
- Sound of bursting crackers
- Sound of loudspeakers, TV, transistors

6. **Explain in what way noise pollution is harmful to human.**

Noise pollution causes:

- (a) Lack of sleep
- (b) Anxiety
- (c) Hypertension

and these are harmful to health.

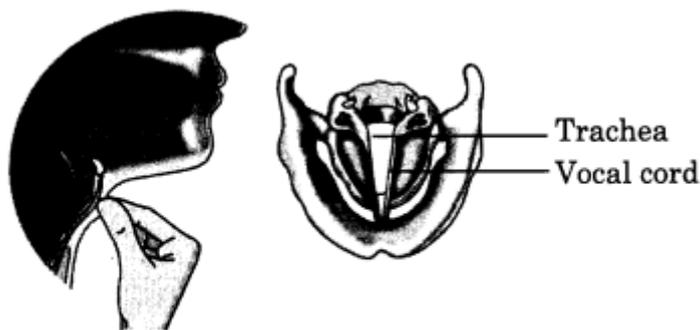
7. **Your parents are going to buy a house. They have been offered one on the roadside and another three lanes away from the roadside. Which house would you suggest your parents should buy? Explain your answer.**

I would suggest my parents buy a house three lanes away from the roadside because house on the roadside would be much noisy in both days and night due to running vehicles. Whereas, a house three lanes away would be comparatively quieter as the intensity of noise decreases with the distance between the source and the listener.

8. **Sketch larynx and explain its function in your own words.**

arynx is also known as voice box. It is at the upper end of the windpipe. Two vocal cords are stretched across the voice box or larynx in such a way that it leaves a narrow slit between them for passage of air (Fig. 13.12). When lung force air

through the slit, the vocal cords vibrate, producing sound. Muscles attached to the vocal cords can make the cords tight or loose.



Larynx in human

When the vocal cords are tight and thin, the type or quality of voice is different from that when they are loose and thick.

9. **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?**

The speed of light is more than that of the speed of sound. Thus, due to more speed of light it reaches us before sound. So, lightning is seen earlier and thunder is heard later.

11. Chemical Effects of Electric Current

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1. **ASSERTION:** Tin cans, used for storing food, are made by electroplating tin onto iron.
REASON: Tin is more reactive than iron. Thus, food does come into contact with iron and is protected from getting spoilt.

Ans - C

2. **ASSERTION:** Iron is used in bridges and automobiles to provide strength.
REASON: A coating of zinc is deposited on iron to protect it from corrosion and formation of rust.

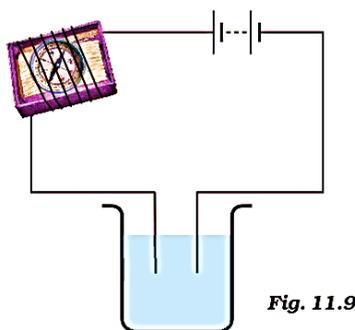
Ans - B

II. Answer the following Questions:

1. When the free ends of a tester are dipped into a solution, the magnetic needle shows deflection. Can you explain the reason?

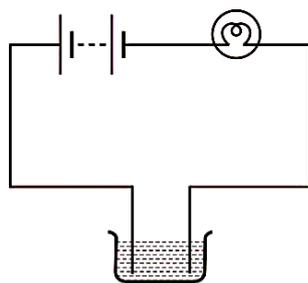
The deflection in magnetic needle shows that the circuit is complete and the solution conducts electricity, i.e., it is a good conductor.

2. Name three liquids, which when tested in the manner shown in Fig.11.9, may cause the magnetic needle to deflect.



Vinegar, lemon juice and tap water.

3. The bulb does not glow in the setup shown in Fig.11.10. List the possible reasons. Explain your answer.



The bulb may not glow because of the following reasons:

- (i) The wires in the circuit may be loosely connected.
 - (ii) The bulb may be fused.
 - (iii) The cells may be used up.
 - (iv) The liquid may be an insulator, i.e., a poor conductor of electricity.
4. Does pure water conduct electricity? If not, what can we do to make it conducting?
No, pure water doesn't conduct electricity. But when salt is dissolved in pure water, it conducts electricity.
5. In case of a fire, before the firemen use the water hoses, they shut off the main electrical supply for the area. Explain why they do this.
The water used in the water hoses is not pure water and is a good conductor of electricity. So, the fire-men shut off the electric supply before spraying water to save themselves and other people from electrocution.

- 6. A child staying in a coastal region tests the drinking water and also the seawater with his tester. He finds that the compass needle deflects more in the case of seawater. Can you explain the reason?**

The seawater contains a huge amount of salts in comparison to drinking water, hence the seawater is a better conductor of electricity and it produces a stronger magnetic field in the wire and hence deflects the compass needle more.

- 7. Is it safe for the electrician to carry out electrical repairs outdoors during heavy downpour? Explain.**

No, it is highly dangerous to carry out the electrical repairs outdoors during the heavy downpour. It can cause electrocution, as water is a good conductor of electricity.

- 8. Paheli had heard that rainwater is as good as distilled water. So she collected some rainwater in a clean glass tumbler and tested it using a tester. To her surprise she found that the compass needle showed deflection. What could be the reasons?**

Rainwater is pure water which is an insulator but it gets mixed with air pollutants like sulphur dioxide and nitrogen oxides and form acidic solution, which is a good conductor of electricity. So, the compass needle showed deflection.

- 9. Prepare a list of objects around you that are electroplated.**

Objects that are electroplated are door handles, taps, rims of cycles, showers, the handlebar of cycles and bikes, gas burner, tin cans, metallic almirahs, buckles of belts, etc.

- 10. The process that you saw in Activity 11.7 is used for purification of copper. A thin plate of pure copper and a thick rod of impure copper are used as electrodes. Copper from impure rod is sought to be transferred to the thin copper plate. Which electrode should be attached to the positive terminal of the battery and why?**

The thick rod of impure copper plate is to be attached to the positive terminal of the battery because when electric current is passed through the copper sulphate solution, it gets dissociated into copper and sulphate. The free copper, being positively charged, gets drawn to the negative terminal of the battery and gets deposited on it. On the other hand the loss of copper from the solution is regained from the impure copper rod which is attached to the positive terminal of the battery.