

PHYSICS CLASS-7
CHAPTER- 6: SOUND
ANSWER KEY

- A.** 1. False
2. False
3. False
4. True
5. True
6. False
7. True
8. False
9. True
10. True
- B.** 1. (b) travelling of energy
2. (b) direction in which energy of wave is moving
3. (b) increase in density of air molecules
4. (d) solids, liquids and gases
5. (a) amplitude of vibration
6. (d) vacuum
7. (c) frequency
8. (d) none of these
- C.** 1. Mechanical.
2. wave.
3. medium.
4. echo.
5. solids.
6. reflecting.
7. absorbing.
8. frequency.
9. particles, energy.
10. waves, time.
- D.** 1. (c)
2. (d)
3. (c)
4. (a)
5. (f)
6. (e)
- E.** 1. Light. Sound is a longitudinal wave and light is a transverse wave.
2. 20 kHz. Galton Whistles produces 30kHz.

3. Relaxed. When producing high pitched sound, the vocal cords are taut and thin and when they are relaxed they produce low frequency sound.

4. Absorption. Speaking tube is based on the application of reflection of sound.

5. Rarefaction. The region of higher pressure is termed as compression and region of low pressure is termed as rarefaction.

6. Liquids. The speed of sound in air is 343 m/s.

F. 1. Reflection

2. Amplitude

3. Frequency

4. Rarefaction

G. 1. Longitudinal waves are waves in which the motion of the individual particles of the medium are in a direction that is parallel to the direction of energy transport.

2. Pitch is defined as the degree of highness or lowness of a frequency for a certain sound wave.

3. The amplitude 'a' of a wave is the distance from the mean position of the wave to the top of a crest or to the bottom of a trough.

4. The frequency, f , of a wave is the number of waves passing a point in a certain time.

5. Wavelength is the distance between identical points (adjacent crests or trough) in the adjacent cycles of a sound wave.

6. The direction of the wave with respect to the motion of individual particles of the medium is termed as propagation of wave.

H.

1. Sound is a form of energy, which gives us a sensation of hearing in our ears.

Sound is produced by a vibrating body. As a body vibrates it pushes the air near its surface, thereby producing compressions (high density regions) and rarefactions (low density regions).

2. Sound waves in air are longitudinal waves because particles of the medium through which the sound is transported vibrate parallel to the direction that the sound wave moves.

3. The loudness of sound depends on the amplitude of vibration producing that sound. The greater the amplitude of vibration, louder is the sound.

4. Sound travels slowest in gases, faster in liquids and fastest in solids.
5. The speed of the sound is maximum in solid because solids have larger density than liquids or gases.
6. The region of high pressure, the density of air is higher than normal, is called a compression, while the region of low pressure, the density of air is lower than the normal, is called a rarefaction.
7. The speed of sound in air depends upon on the nature of the medium, its temperature, its density and its humidity.
8. i) Big auditoriums are carpeted in order to draw energy from the sound wave and convert it into a tiny amount of heat creating deadening of sound, which is termed as absorption of the sound waves.
ii) There is no medium in space, therefore sound cannot reach us from space.

I. 1. The larynx is the body's voice box, containing the vocal cords, which vibrate to produce speech. The vocal cords vibrate when someone speaks and the sounds produced are modified by the throat, nose and mouth. The chambers which give resonance to voice include the whole mouth chamber, the nose, the pharynx and a lesser degree the chest cavity.

The pitch of sound is changed by the muscles attached to the vocal chords. When the vocal chords are taut and thin, sound of high frequency (or shrill sound) is produced and when the vocal chords are relaxed and thick, low frequency (or bass) sound is produced.

2. The applications of reflection of sound are speaking tube, ear trumpet and sound boards, etc.

The phenomenon of reflection of sound is put into use in the instrument:

Speaking tube: The sound waves are confined with the help of speaking tube or a megaphone so that they travel in a particular direction. The sound waves are propagated in the desired direction and as there is no loss of energy in other directions, they can travel a large distance.

3. An experiment to prove that sound cannot travel through vacuum is as follows:

An electric bell is suspended in an air tight bell jar. The bell jar is connected to a vacuum pump. If the air is pumped out through the vacuum pump, we cannot hear the sound of the bell. This shows that sound needs a medium to travel and sound cannot travel in vacuum. So sound can propagate not only through gases but also through solids and liquids.

< Draw a diagram of bell jar for the experiment to demonstrate that sound requires a medium to travel >
