Class 9 chapter Sound CBSE Solved Test paper-2

CBSE NCERT IX-Physics for term-II Chapter: Board Paper Questions with solutions

1. Q. Explain how bats use ultrasounds to catch a prey ?

Ans: Bats search out prey and fly in dark night by emitting and detecting reflections of ultrasonic waves. The high pitched ultrasonic squeaks of the bat are reflected from the obstacles or prey and returned to bat's ear. The nature of reflection tells the bat where the obstacle or prey is and what it is like.

2. Q. Explain how moths of certain families are able to escape capture from a bat ?

Ans: Moths of certain families have very sensitive hearing equipment. These moths can hear the high frequency squeaks of the bat and know where a bat is flying nearby and are able to escape capture.

3. Q. (a) Why are sound waves called mechanical waves ? List two practical applications of reflection of these waves.

(b) A stone is dropped from the top of a tower 125 m high into a pond of water at the base of the tower. When is the splash heard at the top ?

Ans: (a) Sound waves are called mechanical waves as they require material medium for propagation. Stethoscope, Megaphones, horns, musical instruments as trumpets etc.

(b) Speed of sound = 340 m/s; g = 10 m/s2; $u = 0$; h =125 m; t = ?

$h = ut + ½ gt^2$

$\Rightarrow 125 = 0 + 1/2 \times 10 \times t^2 \Rightarrow t = 5$ s

Let T be the time taken by sound to reach the top after splash

T = 125m /340 m/s = 0.37 s

Splash will be heard after t + T = (5 + 0.37)s = 5.37 s

4. Q. Describe an activity to show that sound needs a material medium for its propagation.

Ans: Take an electric bell in an air light bell jar fig be drawn. It is connected to vacuum pump. If you press the switch, able to hear sound with vacuum pump, take

out air, sound becomes fainter. After some time, when less air is left inside, you' ll hear very feeble sound.

5. Q. What is an echo? When can we distinctly hear the echo of a sharp sound? Why can not we hear an echo in a small halls ?

Ans: An echo is the reelection of sound.

We can distinctly hear the echo of a sharp sound if speed of sound is 350 m/s and persistence of sound is 1/10 second then

Minimum distance between the observer and reflecting surface should be at least 17.5 m

We can not we hear an echo in a small halls as in a small room the distances is less than 17-5 m.

6. Q. (a) List in tabular form two distinguishing features between longitudinal waves and transverse waves. Give an example of each.

(b) State and define three characteristics associated with sound waves

Ans: Longitudinal waves

(i) The individual particles of the medium move in a direction parallel to the direction of propagation of the disturbance

(ii) Compressions and rarefaction are formed e.g. Sound waves

Transverse waves

The individual particles of the medium move about their mean positions in a direction perpendicular to the direction of Wave propagation.Crests and troughs are formed.e.g. Light Waves.

Three characteristics associated with sound waves

Pitch :- How the brain. interprets the frequency of an emitted sound is called its pitch.

Amplitude :- The magnitude of the maximum disturbance in the medium on either side of the mean value is called the amplitude.

Timber :- Timber or quality of sound is that characteristic which enables us to distinguish one sound form another having the same pitch and loudness

7. Q. Give two examples of each longitudinal and transverse waves

Ans: Sound waves and waves in a stretched spring are example of longitudinal waves. Light wave and radio wave are transverse waves

8. Q. A ship sends out ultra sound that returns from the seabed and is detected after 4s. If the speed of ultra sound through sea water is 1550 m/s, find the distance of the seabed from the ship.

Ans: Distance travelled by the ultrasound = 2x depth of the sea =2d

2d = Speed of sound / time =1550 / 4

=> d = 1550 x 2 m = 3100 m

This the distance of the seabed from the ship is 3100 m.

9. Q. What is meant by reverberation ? State the advantages of curved ceilings of cinema halls and conference halls.

Ans: A sound created in a big hall persist by repeated reflection from the walls. This phenomenon is called .

reverberation

Cinema halls and conference halls are generally have curved ceilings as curved ceilings reflect the sound and spread it evenly across the width of the hall.

10. Q.(a) List two factors on which speed of sound depends. (b) Distinguish between intensity of sound and loudness of sound. (c) The frequency and wavelength of sound wave are 2 kHz and 0.35 m respectively. Find the time it will take to travel a distance of 1.5 km.

Ans: (a) Speed of sound depends upon (i) Medium (ii) Temperature

(b) The amount of sound energy passing each second through unit area is called the intensity of sound.

Loudness is a measure of the response of the ear to the sound.

(c) Frequency = 2 KHz = 2000 Hz

Wavelength = 35 cm = 0.35 m ; speed v = 0.35 x 2000 = 700 m/s

Now time taken by a wave to travel a distance of 1.5 km = 1500 /700 = 2.1 s