

BRAIN INTERNATIONAL SCHOOL

Physics Assignment

Class: IX

Dec'2024

Chapter 11: Sound

1. MULTIPLE CHOICE QUESTIONS:

- i. A key of a mechanical piano struck gently and then struck again but much harder this time. In the second case
 - (a) sound will be louder but pitch will not be different
 - (b) sound will be louder and pitch will also be higher
 - (c) sound will be louder but pitch will be lower
 - (d) both loudness and pitch will remain unaffected
- ii. Same notes being played on guitar and harmonium different.
 - (a) pitch
 - (b) quality
 - (c) both pitch and quality
 - (d) neither pitch nor quality

2. In each of the following questions, two statements are given- one labeled Assertion (A) and the other labeled Reason (R). Select the correct answer to these questions from the codes (a), (b), (c) and (d) as given below:

- a) Both A and R are true, and R is correct explanation of the assertion.
- b) Both A and R are true, but R is not the correct explanation of the assertion.
- c) A is true, but R is false.
- d) Both assertion and reason are false.
 - (i) **Assertion:** A sound of high pitch is said to be shrill.
Reason: Pitch of a sound increases on increasing its frequency.
 - (ii) **Assertion:** Sound is produced due to vibrations of an object.
Reason: Only those vibrations produce sound whose frequency of vibration lies between 20 and 20,000 hertz.

3. Answer the following questions:

1. Distinguish between transverse and longitudinal wave.
2. A hospital uses an ultrasonic scanner to locate tumors in a tissue. What is the wavelength of ultrasound in a tissue in which the speed of ultrasound is 1.5 kilometer per second? The operating frequency of this camera is 4 MHz
3. Show that the minimum distance between a sound source and reflector for distinct echo is 17.2 m.
4. Anil was gently pushed by the hammer and then subsequently was hit harder.
 - a) When will be the sound greater louder?
 - b) Which characteristics of sound hair is responsible for change in sound?

5. Draw a graph showing density and pressure variations with respect to distance for a disturbance produced by sound wave? Mark the position of compression and rarefaction on this curve/graph. Name the regions of maximum and minimum change in pressure respectively?
6. Explain, how defects in a metal block can be detected using ultrasound?
7. A ship sends out ultrasound produced by transmitter that returns from the seabed and detected after 3.42 seconds. If the speed of ultrasound through sea water is 1530 m/s, what is the distance of the seabed from the ship?
8. For hearing the loudest ticking sound heard by the ear, find the angle x in the Fig.

