



ASSIGNMENT NO. 6

SUBJECT: PHYSICS

CLASS-IX

DECEMBER'2025

Chapter-11 Sound

1. Choose the correct option:

- i. Earthquake produces which kind of sound before the main shock wave begins
 - a) ultrasound
 - b) infrasound
 - c) audible sound
 - d) none of the above
- ii The number of compressions or rarefactions per unit time gives:
 - a) frequency
 - b) time period
 - c) amplitude
 - d) pitch

2. In each of the following questions, two statements are given one labelled. Assertion

(A) and the other labelled Reason (R). Select the correct answer to these questions 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) A is false, but R is true.

- (i) Assertion: The waves in which the individual particles of the medium move about their mean positions in a direction perpendicular to the direction of wave propagation, is known as Transverse waves.

Reason: The loudness or softness of a sound is determined basically by its amplitude.

- (ii) Assertion: Echoes cannot be heard in small rooms.

Reason: Echoes require a minimum distance of 17 meters from the reflecting surface.

3. Answer the following question.

1. What is a stethoscope? Name the principle on which a stethoscope works.
2. Draw a graph for a wave representing wave disturbance and time for a sound changing from low pitch to high pitch, keeping the amplitude of the sound same.
3. Show that the minimum distance between a sound source and reflector for distinct echo is 17.2 m.

4. Give reasons for the following:

- (a) A vibrating body produces sound. However, no sound is heard when a simple pendulum oscillates in air.
- (b) Sounds of same loudness and pitch but produced by different musical instruments like a violin and flute are distinguishable.

5. (a) What should be the minimum distance between the listener and the reflector to hear an echo of sound propagating with a speed $v \text{ ms}^{-1}$?

(b) Does the speed of sound increase or decrease on a hotter day? Justify.

4. Answer the following case study-based questions

In an empty auditorium, a student claps and hears multiple faint sounds after the original clap. The physics teacher explains that these repeated sounds are caused by reflection of sound from walls, roof, and seats. The teacher also says that if reflected sound reaches after 0.1 second or more, it is called an echo; otherwise, it produces reverberation.

To reduce reverberation, materials like carpets, curtains, and acoustic panels are used.

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- (i) What is reverberation?
- (ii) How is an echo different from reverberation?
- (iii) Why does an empty room produce more echo than a furnished room?
- (iv) Give one application of reflection of sound.