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NCERT Class - 9 Science Solutions: Chapter 12 - Sound Part 4

Long Answer Questions

Question 18:

Represent graphically by two separate diagrams in each case

A. Two sound waves having the same amplitude but different frequencies?

B. Two sound waves having the same frequency but different amplitudes.

C. Two sound waves having different amplitudes and also different wavelengths.

Answer:

(A) Two sound waves having same amplitude but different frequencies

(B) Two sound waves with same frequency and different amplitudes

(C) Two sound waves having varying amplitudes and different wavelengths

Question 19:

Establish the relationship between speed of sound, its wavelength and frequency. If velocity of sound in air is $340 ms^{-1}$, calculate

    A. Wavelength when frequency is $256 \, Hz$.

    B. Frequency when wavelength is $0.85 m$.

Answer:

        Derivation of formula $v = v \, \lambda$.

    A. $340 = 256\lambda$

 $\lambda = 1.33 m$.

    B. $340 = v \, (0.85)$

        $v = 400 \, Hz$

Question 20:

Draw a curve showing density or pressure variations with respect to distance for a disturbance produced by sound. Mark the position of compression and rarefaction on this curve. Also define wavelengths and time period using this curve.

Answer:

We have a curve showing density or pressure variations with respect to distance for a disturbance produced by sound.
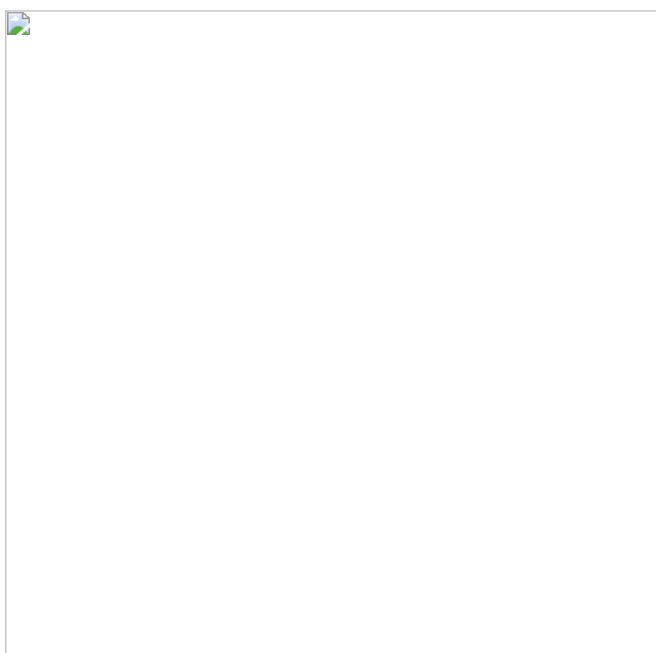
Wavelength can be defined as the distance between two successive compression or rarefaction. It is denoted by. Time taken by the waves to complete one full cycle, so that its particles are in same phase is called time period. It is denoted by T.

Time period is the time taken to travel the distance between any two consecutive compressions or rarefactions from a fixed point.