

Home Assignment

1. Two tuning forks, A and B vibrate with frequencies in the ratio $2:7$ & their wavelength in the ratio $3:4$ respectively

(i) Find the tuning fork producing greater velocity of sound

Tuning fork B

(ii) The tuning fork A produces relatively shrill sound than tuning fork B

2. State two practical uses or application of echoes

(i) Megaphone / Speaking tube

(ii) Stethoscope

3(a) The reverberation time of a hall used for speeches should be very short.

If the reverberation time of a hall is long, then the multiple echoes will interfere with original sound.

For this reason nothing will be heard distinctly. So the reverberation time of the hall should be very short.

(b) A vibrating body produces sound, However no sound is heard when a simple pendulum oscillates.

A sound is heard only if the body vibrates with a frequency more than 20 Hz & less than 20000 Hz. The pendulum oscillates with a frequency less than 20 Hz. Hence, no sound is heard.

(c) Sound of same loudness & pitch but produced by different musical instrument like a violin & flute are distinguishable.

This is due to the quality of sound waves or Timbre.

4. A stone is dropped from the top of a tower 125m high into a pond at the base of the tower. When is the splash heard at the top ($g = 10 \text{ m/s}^2$ & speed of sound = 340 m/s)

$$s = ut + \frac{1}{2}gt^2$$

$$125 = 10 \cdot \frac{1}{2} \times 10 \times t_1^2$$

$$125 = 5t_1^2$$

$$\Rightarrow t_1^2 = 25$$

$$\Rightarrow t_1 = 5$$

$$s = vt$$

$$125 = 340 \times t_2$$

$$t_2 = 0.36 \text{ sec}$$

$$\therefore t_1 + t_2 = 5.36 \text{ sec}$$

5. "A sound wave with frequency higher than 20 kHz is not audible for human ear". Answer the following in respect of this statement.

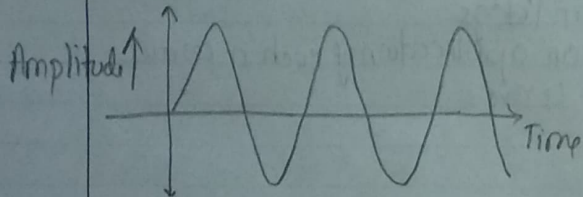
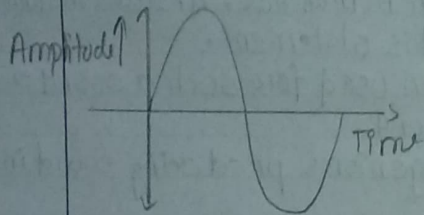
(i) What is the term used for such a sound?
 Ultrasonic Sound

(ii) Name two organisms producing sound in this range.
 Bats and dogs.

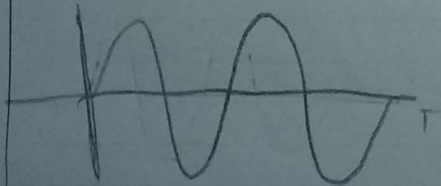
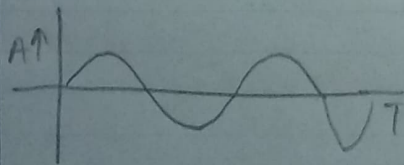
(iii) Write an application of such a wave.
 Sonic wave.

Cw

Q1) Two waves of same amplitude of ~~but~~ diff. frequencies



Q2) Same frequency
Different Amplitude & diff. wavelengths



130

Cw

Q3) Diff. Amplitudes & diff. wavelengths

