THE INTERNATIONAL SCHOOL AGRA

SOUND Grade – IX

NUMERICALS

1. The human heart, on an average , is found to beat 75 times a minute. Calculate its frequency.
2. The Delhi – C station of all- India radio transmits music at 219m wavelength and 1370 kHz frequency. Calculate the velocity of radio waves.
3. A bat can hear sound at frequencies up to 120khz. Determine the wavelength of sound in air at this frequency. Take the speed of sound in air as 344m/sec.
4. A boat at anchor is rocked by waves whose consecutive crests are 100m apart . The wave velocity of the moving crests is 20m/sec. What is the frequency of rocking of the boat?
5. Sound of the wavelength 2 cm is propagating through air with a speed of 340m/sec . What will be the frequency of sound and will it be audible to you? Explain. Why? Represent the shape of this sound wave graphically and mark on it with an arrow, the distance representing one wavelength.
6. A source of wave produces 40 crests and 40 troughs in 0.4 second. Find the frequency of wave.
7. A) Ocean waves of time period of 0.01 sec have a speed of 15m/sec. What is the wavelength of these waves?
   B) Find the horizontal distance between a wave crest wave crest and the adjoining wave trough. You may assume the waves as harmonic.

8. A sound wave travels at a speed of 330m/sec. If its wavelength is 1.5 cm, What is the frequency of the wave? Will it be audible to humans?

9. During a thunderstorm, sound is heard 10 sec after lightning is seen. What is the distance of the cloud from the observer? Take velocity of sound as 330m/sec.

10. A child hears an echo from a cliff 4 seconds after the sound from a powerful cracker is produced. How far away is the cliff from the child? Given that the speed of sound is 340m/sec.

11. A stone is dropped into a well, 44.1 meters deep. The sound of the splash is heard 3.13 seconds after the stone is dropped. Find the velocity of sound in air.

12. Using the SONAR, sound pulses are emitted at the surface of water. These pulses after being reflected from bottom of water are detected. If the time interval from the emission to the speed of the sound pulses is 2 seconds, find the depth of the water.