

CHAPTER-11 | Sound

QUIZ-01

1. What is the cause of sound production?

- A. Movement of air
- B. Vibration of objects
- C. Flow of current
- D. Movement of light (B)

Explanation: Sound is produced by the vibration of objects such as tuning forks, vocal cords, and stretched strings.

2. What is the nature of sound waves in air?

- A. Transverse waves
- B. Circular waves
- C. Longitudinal waves
- D. Electromagnetic waves (C)

Explanation: In air, sound propagates as longitudinal waves with compressions and rarefactions.

3. What is the SI unit of frequency?

- A. Second
- B. Meter
- C. Hertz
- D. Pascal (C)

Explanation: Frequency is measured in hertz (Hz), named after Heinrich Hertz.

4. Which property of sound determines its pitch?

- A. Amplitude
- B. Speed
- C. Frequency
- D. Wavelength (C)

Explanation: Pitch depends on the frequency of vibration. Higher frequency means higher pitch.

5. What is the audible range of the human ear?

- A. 2 Hz – 200 Hz
- B. 20 Hz – 20,000 Hz
- C. 200 Hz – 2,000 Hz
- D. 2,000 Hz – 20,000 Hz (B)

Explanation: The normal hearing range of humans lies between 20 Hz and 20,000 Hz.

6. Which of the following uses multiple reflection of sound?

- A. Thermometer
- B. Stethoscope
- C. Stopwatch
- D. Microscope (B)

Explanation: In a stethoscope, sound travels to the doctor's ears by multiple reflection of sound waves.

7. What minimum distance is required to hear an echo clearly?

- A. 10 m
- B. 17.2 m
- C. 25 m
- D. 0.1 m (B)

Explanation: The reflected sound must reach after 0.1 seconds. At a speed of 344 m/s, the minimum distance required is 17.2 m.

8. Which instrument uses ultrasound to view internal organs?

- A. Thermometer
- B. Telescope
- C. Ultrasound scanner
- D. Periscope (C)

Explanation: Ultrasound scanners use ultrasonic waves to create images of organs like kidney, liver, and uterus.

9. What is the relation between speed (v), frequency (ν), and wavelength (λ)?

- A. $v = \lambda + \nu$
- B. $v = \lambda \nu$
- C. $v = \nu/\lambda$
- D. $v = \lambda/\nu$ (B)

Explanation: Speed of sound = Wavelength $\times$ Frequency, i.e., $v = \lambda \nu$

10. What kind of sound has frequency more than 20,000 Hz?

- A. Audible sound
- B. Noise
- C. Infrasound
- D. Ultrasound (D)

Explanation: Ultrasound refers to sound with frequency higher than 20 kHz (20,000 Hz).