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CLASS 10 • PHYSICS • CHAPTER 11

SOUND

Comprehensive **Solved MCQs**
with Detailed Explanations

65 MCQs | 7 Sections | Answers ✔ Ticked

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1 Section 1: Production and Propagation of Sound

Questions 1–11 • 11 MCQs

Q1 **What is the fundamental cause of sound production?**

A Heating a body

B **Vibrating a body** ✔

C Cooling a body

D Rotating a body

★ **Answer: B) Vibrating a body**

Explanation: Sound is a form of energy that requires a mechanical disturbance. When an object vibrates, it disturbs the surrounding air particles, creating a wave that travels to our ears. Without vibration, there is no sound.

Q2 **Which of the following is NOT a source of sound?**

A Human vocal cords

B A plucked guitar string

C **A stationary rock** ✔

D A beating heart

★ **Answer: C) A stationary rock**

Explanation: A stationary object does not disturb the medium around it. Sound generation strictly requires a back-and-forth motion (vibration) of the source, which a stationary rock lacks.

Q3 **In the activity with the tuning fork, what happens when the vibrating prong touches a suspended table tennis ball?**

A The ball remains still

B The ball pushes the prong back

C The ball gets attracted to the fork

D The ball is pushed away ✔

★ **Answer: D) The ball is pushed away**

Explanation: This demonstrates that a vibrating body possesses kinetic energy and exerts a force. The vibrating prong of the tuning fork physically transfers energy to the ball, causing it to bounce away.

Q4 **When a vibrating tuning fork is dipped into a glass of water, what is observed?**

A The water freezes

B The water splashes out ✔

C The water color changes

D The fork melts

★ **Answer: B) The water splashes out**

Explanation: The vibrations of the tuning fork are transferred to the water molecules. This energy causes the water to agitate, resulting in a visible splash, proving that the fork is indeed vibrating.

Q5 **Sound waves are classified as:**

A Electromagnetic waves

B Mechanical waves ✔

C Transverse waves

D Light waves

★ **Answer: B) Mechanical waves**

Explanation: Mechanical waves require a physical medium (like air, water, or solids) to transport their energy. Electromagnetic waves (like light) can travel through a vacuum, but sound cannot.

Q6 **Which of the following experiments proves that sound requires a material medium for propagation?**

A Tuning fork in water
B Guitar string vibration
C **Bell jar apparatus** ✔
D Human vocal cords

★ **Answer: C) Bell jar apparatus**

Explanation: The bell jar experiment contains an electric bell. As the air is pumped out, creating a vacuum, the sound fades away. This proves that without a medium (air), sound waves cannot travel.

Q7 **In a vacuum, the speed of sound is:**

A 340 m/s
B 1000 m/s
C **Zero** ✔
D Infinite

★ **Answer: C) Zero**

Explanation: Sound requires particles to vibrate and transfer energy. A vacuum is completely empty space with no particles, meaning no medium exists for the sound waves to propagate. Therefore, sound cannot travel in a vacuum.

Q8 **Sound waves in air are:**

A Transverse waves
B **Longitudinal waves** ✔
C Electromagnetic waves
D Stationary waves

★ **Answer: B) Longitudinal waves**

Explanation: In longitudinal waves, the particles of the medium vibrate parallel to the direction of wave propagation. Sound creates regions of compression (high pressure) and rarefaction (low pressure) as it moves forward through the air.

Q9 **What is a "compression" in a sound wave?**

A. A region where particles are far apart

B. A region of low air pressure

C. **A region where particles are crowded together** ✔

D. A region with no particles

★ **Answer: C) A region where particles are crowded together**

Explanation: When a vibrating source pushes forward, it squeezes the adjacent air molecules together. This area of high density and high pressure is called a compression.

Q10 **What is a "rarefaction" in a sound wave?**

A. **A region where particles are spread apart** ✔

B. A region of high air pressure

C. The crest of a wave

D. The wavelength of a wave

★ **Answer: A) A region where particles are spread apart**

Explanation: As the vibrating source pulls back, it creates a void, allowing air molecules to spread out. This region of low density and low pressure is called a rarefaction.

Q11 **The distance between two consecutive compressions or two consecutive rarefactions is called:**

A Amplitude
B Frequency
C **Wavelength** ✓
D Time period

★ **Answer: C) Wavelength**

Explanation: Wavelength is the measure of one complete wave cycle. For a longitudinal wave like sound, measuring from one high-pressure zone (compression) to the next high-pressure zone gives the wavelength.

2 Section 2: Characteristics of Sound

Questions 12–20 • 9 MCQs

Q12 **Which characteristic of sound distinguishes a loud sound from a faint one?**

A Pitch
B Quality
C **Loudness** ✓
D Wavelength

★ **Answer: C) Loudness**

Explanation: Loudness is the subjective human perception of sound intensity. A loud sound has a large amplitude, while a faint sound has a small amplitude.

Q13 **Loudness of a sound depends directly on the:**

A Frequency of the wave

B Amplitude of the vibrating body ✔

C Quality of the wave

D Speed of the wave

★ **Answer: B) Amplitude of the vibrating body**

Explanation: The greater the amplitude of a vibration, the more energy the sound wave carries, and the louder it sounds. Think of hitting a drum hard (large amplitude) vs. softly (small amplitude).

Q14 **If the area of a vibrating body increases, the loudness of the sound will:**

A Decrease

B Increase ✔

C Remain the same

D Become zero

★ **Answer: B) Increase**

Explanation: A larger vibrating area (like a large drum vs. a small drum) pushes more air molecules at once, creating a stronger wave with greater intensity, thus increasing the loudness.

Q15 **As sound travels away from the source, its loudness decreases because:**

A The frequency drops

B The energy is absorbed by the medium and spreads out ✔

C The pitch changes

D The wavelength becomes zero

★ **Answer: B) The energy is absorbed by the medium and spreads out**

Explanation: Sound energy spreads outward in all directions (like an expanding sphere). As the wave expands, its energy is distributed over a larger area, and some energy is absorbed by the medium, causing the amplitude to decrease.

Q16 **Which characteristic of sound helps us distinguish between a shrill and a grave sound?**

A Loudness

B Intensity

C Pitch ✔

D Quality

★ **Answer: C) Pitch**

Explanation: Pitch is how high or low a sound seems to our ears. A high-frequency wave produces a shrill (high-pitched) sound, while a low-frequency wave produces a grave (low-pitched) sound.

Q17 **Pitch of a sound depends upon its:**

A Amplitude

B Frequency ✔

C Speed

D Wavelength

★ **Answer: B) Frequency**

Explanation: Frequency is the number of vibrations per second. More vibrations per second (higher frequency) result in a higher pitch.

Q18 **The voice of a lady is generally shriller than that of a man because:**

A Her vocal cords vibrate with a lower frequency

B Her vocal cords vibrate with a higher frequency ✔

C Her vocal cords have a larger area

D She speaks more loudly

★ **Answer: B) Her vocal cords vibrate with a higher frequency**

Explanation: Shrillness corresponds to high pitch. Women typically have shorter and thinner vocal cords, which vibrate faster (higher frequency) than men's, producing a higher-pitched voice.

Q19 **The characteristic of sound that distinguishes two sounds of the same loudness and pitch is called:**

A Intensity

B Quality (Timbre) ✔

C Frequency

D Wavelength

★ **Answer: B) Quality (Timbre)**

Explanation: Even if a piano and a flute play the exact same note at the exact same volume, we can tell them apart. This is due to their quality, which depends on the complex waveform (mixture of frequencies) produced by the instrument.

Q20 **Which of the following determines the quality of a musical note?**

- A) The amplitude of the wave
- B) The frequency of the wave
- **C) The waveform of the wave** ✔
- D) The speed of the wave

★ **Answer: C) The waveform of the wave**

Explanation: The waveform shows the exact shape of the sound wave. Instruments playing the same pitch at the same loudness will have different shapes due to varying overtones, giving each instrument its unique quality.

3 Section 3: Intensity and Sound Level

Questions 21–30 • 10 MCQs

Q21 **Sound energy passing per second through a unit area held perpendicular to the direction of propagation is called:**

- A) Loudness
- B) Pitch
- **C) Intensity** ✔
- D) Frequency

★ **Answer: C) Intensity**

Explanation: Intensity is a measurable physical quantity that describes the power of the sound wave per unit area. It is independent of human hearing perception.

Q22 **The SI unit of sound intensity is:**

A Decibel (dB)

B Watt (W)

C **Watt per square metre (W/m²)** ✔

D Hertz (Hz)

★ **Answer: C) Watt per square metre (W/m²)**

Explanation: Since intensity is Power (Watts) divided by Area (square metres), the unit is W/m². Loudness is subjective, but intensity is the objective physical measurement.

Q23 **The faintest audible sound intensity, used as a reference, is:**

A 10^{-10} W/m²

B **10^{-12} W/m²** ✔

C 10^{12} W/m²

D 1 W/m²

★ **Answer: B) 10^{-12} W/m²**

Explanation: This extremely small value is the threshold of hearing (represented as I_0) for a healthy human ear at a frequency of 1000 Hz.

Q24 **The unit "bel" is named after:**

A Thomas Edison

B **Alexander Graham Bell** ✔

C Isaac Newton

D Albert Einstein

★ **Answer: B) Alexander Graham Bell**

Explanation: Alexander Graham Bell is famously known for inventing the telephone and did extensive work in acoustics and communication, hence the unit for sound intensity level is named in his honor.

Q25 **One bel is equal to how many decibels?**

A) 1 dB
B) 10 dB ✔
C) 100 dB
D) 0.1 dB

★ **Answer: B) 10 dB**

Explanation: The decibel (dB) is a smaller, more convenient unit for measuring sound level. Since 1 bel is a relatively large unit, it is divided into 10 smaller units called decibels.

Q26 **The intensity level of a sound in decibels is calculated using the formula:**

A) $L = 10 \log(I_0/I)$
B) $L = 10 \log(I/I_0)$ ✔
C) $L = \log(I \times I_0)$
D) $L = 10 \ln(I/I_0)$

★ **Answer: B) $L = 10 \log(I/I_0)$**

Explanation: This formula compares the intensity of a sound (I) to the reference threshold of hearing (I_0). The logarithm is used because the human ear perceives sound intensity over a massive range, which is better represented on a logarithmic scale.

Q27 **What is the intensity level of the faintest audible sound?**

A) 10 dB
B) 1 dB
C) 0 dB ✔
D) 100 dB

★ **Answer: C) 0 dB**

Explanation: If we plug $I = I_0$ into the formula: $10 \log(I_0/I_0) = 10 \log(1)$. Since the log of 1 is 0, the result is 0 dB. This is our baseline for hearing.

Q28 **If the intensity of a sound is 10^{-2} W/m², what is its intensity level?**

A 10 dB
B 20 dB
C **100 dB** ✓
D 120 dB

★ **Answer: C) 100 dB**

Explanation: Using $L = 10 \log(I/I_0)$: $L = 10 \log(10^{-2} / 10^{-12}) = 10 \log(10^{10}) = 10 \times 10 = 100$ dB.

Q29 **A sound of 80 dB is how many times more intense than a sound of 40 dB?**

A 2 times
B 40 times
C 100 times
D **10,000 times** ✓

★ **Answer: D) 10,000 times**

Explanation: The decibel scale is logarithmic. An increase of 10 dB means the intensity is 10 times greater. From 40 dB to 80 dB is a difference of 40 dB (four 10 dB steps). Therefore, 10 × 10 × 10 × 10 = 10,000 times more intense.

Q30 **The human ear is more sensitive to sounds of:**

A Very low frequencies
B Very high frequencies
C **Frequencies around 3500 Hz** ✓
D Frequencies around 50 Hz

★ **Answer: C) Frequencies around 3500 Hz**

Explanation: Our auditory system is naturally tuned to hear mid-range frequencies best. A 3500 Hz sound at 80 dB will sound much louder to us than a 125 Hz sound at the exact same physical intensity.

4 Section 4: Reflection and Echo of Sound

Questions 31–35 • 5 MCQs

Q31 **The bouncing back of sound waves from a surface is called:**

- A Refraction
- B Diffraction
- C Absorption
- D **Reflection (Echo)** ✔

★ **Answer: D) Reflection (Echo)**

Explanation: Just like light, sound waves can bounce off hard, smooth surfaces (like walls or mountains). When this reflected sound reaches our ears after a delay, we hear it as an echo.

Q32 **To hear a distinct echo, the minimum distance between the source of sound and the obstacle should be:**

- A **17 meters** ✔
- B 34 meters
- C 10 meters
- D 50 meters

★ **Answer: A) 17 meters**

Explanation: The human ear retains a sound for about 0.1 seconds. To hear an echo, the reflected sound must arrive after this time. At a speed of 340 m/s, the sound must travel 34 metres round trip (340 × 0.1). Thus, the obstacle must be at least half of that distance (17 metres) away.

Q33 **What is the sensation persistence time of the human ear?**

- A 0.5 seconds
- B 1 second
- C **0.1 seconds** ✔
- D 0.01 seconds

★ **Answer: C) 0.1 seconds**

Explanation: Our brain processes sound with a slight delay. If a new sound arrives within 0.1 seconds of the original, we cannot distinguish them as two separate sounds; they blend together.

Q34 **Multiple reflections of sound in a large hall cause:**

- A Echo
- **B Reverberation** ✔
- C Noise
- D Diffraction

★ **Answer: B) Reverberation**

Explanation: When sound bounces back and forth between walls, ceiling, and floor, it creates a prolonged, garbled sound that slowly fades out. This lingering effect is called reverberation.

Q35 **Which type of surface reflects sound most effectively?**

- A Soft and porous
- **B Hard and smooth** ✔
- C Rough and irregular
- D Curtains and rugs

★ **Answer: B) Hard and smooth**

Explanation: Hard, rigid surfaces (like concrete or glass) do not absorb much sound energy. Instead, they bounce it back strongly, creating clear reflections.

5 Section 5: Speed of Sound

Questions 36–43 • 8 MCQs

Q36 **Sound travels fastest in which of the following mediums?**

- A Gases
- B Liquids
- **C Solids** ✔
- D Vacuum

★ **Answer: C) Solids**

Explanation: In solids, the particles are tightly packed together. This allows them to transfer the vibrational energy to neighbouring particles much faster than in liquids or gases, where particles are further apart.

Q37 **What is the approximate speed of sound in air at 21°C?**

- A) 332 m/s
- B) **343 m/s** ✔
- C) 340 m/s
- D) 1500 m/s

★ **Answer: B) 343 m/s**

Explanation: The speed of sound in air varies with temperature. At a standard room temperature of 21°C, the textbook states the speed is 343 m/s. (It is 332 m/s at 0°C.)

Q38 **Which formula correctly relates the speed, frequency, and wavelength of a sound wave?**

- A) $v = f / \lambda$
- B) $v = \lambda / f$
- C) **$v = f \times \lambda$** ✔
- D) $v = f + \lambda$

★ **Answer: C) $v = f \times \lambda$**

Explanation: Speed is the distance travelled per unit time. A wave travels one full wavelength (λ) in one time period (T). Since $f = 1/T$, the speed is wavelength multiplied by frequency ($v = f\lambda$).

Q39 **A sound wave has a frequency of 500 Hz and a wavelength of 0.68 m. What is its speed?**

- A) **340 m/s** ✔
- B) 343 m/s
- C) 1500 m/s
- D) 500 m/s

★ **Answer: A) 340 m/s**

Explanation: Using the formula $v = f \times \lambda$, we substitute the values: $v = 500 \times 0.68 = 340$ m/s.

Q40 **The speed of sound in water at 25°C is approximately:**

A 343 m/s
B 6420 m/s
C **1498 m/s** ✔
D 972 m/s

★ **Answer: C) 1498 m/s**

Explanation: Sound travels faster in liquids than in gases because the molecules are closer together. According to the table, distilled water has a speed of 1498 m/s.

Q41 **Why does the speed of sound change with temperature?**

A The frequency of the wave changes
B **The medium's particles move faster, transferring energy quicker** ✔
C The wavelength becomes zero
D The medium changes to a solid

★ **Answer: B) The medium's particles move faster, transferring energy quicker**

Explanation: Higher temperatures mean the particles in the medium have more kinetic energy and move faster. This allows them to collide and pass the sound wave along more rapidly.

Q42 **In Example 11.3, if lightning is seen 1.5 seconds before thunder is heard, and the speed of sound is 332 m/s, how far away is the cloud?**

A 332 m
B **498 m** ✔
C 150 m
D 343 m

★ **Answer: B) 498 m**

Explanation: The delay is the time it takes for sound to reach you. Distance = Speed × Time. Therefore, S = 332 × 1.5 = 498 metres.

Q43 **Which of the following factors does NOT affect the speed of sound in a gas?**

- A Temperature
- B Pressure
- C Humidity
- D **Amplitude of the wave** ✓

★ **Answer: D) Amplitude of the wave**

Explanation: The speed of sound depends on the properties of the medium (temperature, density, elasticity). The loudness (amplitude) of the sound does not change how fast it travels.

6 Section 6: Noise Pollution and Acoustics

Questions 44–48 • 5 MCQs

Q44 **Unpleasant and jarring sounds that have harmful effects on health are called:**

- A Musical sounds
- B Harmonics
- C **Noise** ✓
- D Pitch

★ **Answer: C) Noise**

Explanation: Unlike musical sounds which have regular waveforms and are pleasing to the ear, noise consists of irregular, sudden vibrations that sound harsh and can cause stress.

Q45 **What is the generally recommended safe noise level for an eight-hour workday?**

- A 50–60 dB
- B **85–90 dB** ✓
- C 100–110 dB
- D 120–130 dB

★ **Answer: B) 85–90 dB**

Explanation: Prolonged exposure to sounds above 85–90 dB can cause permanent hearing loss and other health issues like high blood pressure and sleep disturbance.

Q46 **The technique used to absorb undesirable sounds by soft and porous surfaces is called:**

A Noise pollution
B **Acoustic protection** ✔
C Reverberation
D Echo

★ **Answer: B) Acoustic protection**

Explanation: Acoustics is the science of sound. Acoustic protection involves using materials designed to absorb sound energy rather than reflect it, reducing noise levels in a room.

Q47 **Which of the following materials is best for absorbing sound?**

A Glass
B Concrete
C **Draperies and rugs** ✔
D Steel

★ **Answer: C) Draperies and rugs**

Explanation: Soft, porous materials have tiny air pockets that trap sound energy, converting it into a tiny amount of heat. Hard surfaces like glass and steel reflect sound, making echoes worse.

Q48 **In the design of a lecture hall, what is the purpose of a curved ceiling?**

A To make the hall look beautiful
B **To evenly distribute reflected sound throughout the hall** ✔
C To absorb all the sound
D To create a vacuum

★ **Answer: B) To evenly distribute reflected sound throughout the hall**

Explanation: Curved ceilings act like giant reflectors, directing sound waves evenly to all corners of the audience, ensuring everyone hears the speaker clearly without dead spots.

7 Section 7: Audible Range, Ultrasound and Applications

Questions 49–65 • 17 MCQs

Q49 **The range of frequencies that a normal human ear can hear is called the:**

A Ultrasonic range
B Infrasonic range
C **Audible frequency range** ✓
D Pitch range

★ **Answer: C) Audible frequency range**

Explanation: This is the specific spectrum of sound frequencies healthy humans can perceive. It is roughly from 20 Hz to 20,000 Hz.

Q50 **The audible frequency range for a normal human ear is:**

A 10 Hz to 10,000 Hz
B **20 Hz to 20,000 Hz** ✓
C 20,000 Hz to 50,000 Hz
D 0 Hz to 20 Hz

★ **Answer: B) 20 Hz to 20,000 Hz**

Explanation: Frequencies below 20 Hz are infrasonic, and above 20,000 Hz are ultrasonic. 20–20,000 Hz is the textbook standard for human hearing.

Q51 **Sounds of frequency higher than 20,000 Hz are called:**

A Infrasonic waves
B Audible waves
C **Ultrasonic waves** ✓
D Radio waves

★ **Answer: C) Ultrasonic waves**

Explanation: The prefix "ultra" means beyond. These high-frequency waves are inaudible to humans but are heavily used in medical imaging and industrial testing.

Q52 **Sounds of frequency lower than 20 Hz are called:**

- A Ultrasonic waves
- **B Infrasonic waves** ✔
- C Microwaves
- D Gamma waves

★ **Answer: B) Infrasonic waves**

Explanation: The prefix "infra" means below. Animals like elephants and whales can communicate using these low-frequency waves, which travel long distances in nature.

Q53 **As a person ages, their audible range generally:**

- A Increases
- **B Decreases** ✔
- C Stays exactly the same
- D Becomes infinite

★ **Answer: B) Decreases**

Explanation: Age-related hearing loss (presbycusis) is natural. Older people often lose the ability to hear high-frequency sounds (like 15,000 Hz) that young children can hear easily.

Q54 **What does the acronym SONAR stand for?**

- **A Sound Navigation and Ranging** ✔
- B Sonic Navigation and Radar
- C Sound Nautical and Ranging
- D System of Navigation and Radio

★ **Answer: A) Sound Navigation and Ranging**

Explanation: SONAR is a technique that uses sound waves to navigate, measure distances, and detect objects underwater.

Q55 **Which of the following is a medical application of ultrasound?**

- A) X-ray imaging
- **B) Breaking kidney stones** ✓
- C) Looking at bone fractures
- D) Measuring blood pressure

★ **Answer: B) Breaking kidney stones**

Explanation: The chapter mentions that powerful ultrasound is used to remove blood clots. In the same way, high-intensity ultrasound is a standard medical tool for breaking up kidney stones (lithotripsy) without invasive surgery.

Q56 **In medical ultrasound, how are images of internal organs formed?**

- A) By passing X-rays through the body
- B) By listening to the heartbeat
- **C) By analyzing sound waves reflected differently by different tissues** ✓
- D) By injecting radioactive dye

★ **Answer: C) By analyzing sound waves reflected differently by different tissues**

Explanation: Ultrasound transmitters send high-frequency sound into the body. When the waves hit boundaries between different organs or tissues, they reflect back. A computer analyzes these echoes to create a visual image.

Q57 **How does SONAR measure the depth of the ocean?**

A By measuring water temperature

B **By calculating the time it takes for a sound pulse to bounce back** ✔

C By using a very long measuring tape

D By dropping a heavy weight

★ **Answer: B) By calculating the time it takes for a sound pulse to bounce back**

Explanation: A ship sends a sound pulse downward. The time it takes for the echo to return is recorded. Using the known speed of sound in water and the time, the depth is calculated (Distance = Speed × Time ÷ 2).

Q58 **Which animal uses high-frequency ultrasonic waves for echolocation?**

A Elephant

B Cow

C **Bat** ✔

D Human

★ **Answer: C) Bat**

Explanation: Bats emit high-pitched ultrasonic squeaks and listen to the echoes to navigate in the dark and hunt insects. Elephants use infrasound, not ultrasound.

Q59 **Industrial ultrasound can be used to:**

A Make metals softer

B **Detect cracks in heavy machinery** ✔

C Generate electricity

D Change the color of materials

★ **Answer: B) Detect cracks in heavy machinery**

Explanation: A powerful beam of ultrasound is sent into a metal part. If there is an internal crack, the sound waves will reflect off it differently than the solid metal, revealing the hidden flaw.

Q60 **How can high-intensity ultrasonic waves be used in liquids?**

A To freeze the liquid

B To change the color of the liquid

C **To destroy germs and bacteria** ✔

D To make the liquid heavier

★ **Answer: C) To destroy germs and bacteria**

Explanation: The intense mechanical vibrations from ultrasonic waves can physically rupture the cell walls of bacteria and germs in a liquid, effectively sterilizing it.

Q61 **What does a doctor use a stethoscope for?**

- **A** **To magnify the heartbeat sound** ✔
- **B** To view the lungs
- **C** To measure body temperature
- **D** To inject medicine

★ **Answer: A) To magnify the heartbeat sound**

Explanation: A stethoscope uses hollow tubes and a diaphragm to channel the vibrations of the heart and lungs directly to the doctor's ears, utilizing the transmission of sound.

Q62 **The sound of a tuning fork is produced due to:**

- **A** Its electrical circuit
- **B** **The vibrations of its prongs** ✔
- **C** The wind passing through it
- **D** Chemical reactions

★ **Answer: B) The vibrations of its prongs**

Explanation: When struck, the metal prongs of the tuning fork vibrate back and forth, compressing and rarefying the surrounding air to produce a pure tone.

Q63 **What happens to the sound of an electric bell inside a bell jar as air is gradually pumped out?**

A It becomes louder

B It becomes shriller

C It becomes fainter and eventually stops ✔

D It remains the same

★ **Answer: C) It becomes fainter and eventually stops**

Explanation: As the air (the medium) is removed, there are fewer and fewer particles to transmit the sound waves. In a complete vacuum, no sound can be heard at all.

Q64 **Two sounds have the same pitch and loudness. The one with the more complex waveform will have a different:**

A Speed

B Wavelength

C Quality ✔

D Frequency

★ **Answer: C) Quality**

Explanation: The waveform represents the mixture of fundamental frequencies and overtones. This specific mixture gives an instrument its unique tone color or quality, even if it plays the same note as another instrument.

Q65 **Reverberation can be reduced in a hall by:**

A Installing hard glass panels

B Adding more reflective mirrors

C **Using soft, sound-absorbing materials on the walls and ceiling** ✔

D Making the hall completely empty

★ **Answer: C) Using soft, sound-absorbing materials on the walls and ceiling**

Explanation: Materials like acoustic foam, carpets, and draperies absorb sound energy, preventing it from continuously bouncing off the walls and causing a prolonged, garbled echo.

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CHAPTER 11 COMPLETE

Keep Learning, Keep Shining!

You have completed all 65 solved MCQs of Sound. Revise the explanations regularly and keep practising for top marks.

Quick Revision Points

- ✔ Sound is a mechanical, longitudinal wave needing a medium
- ✔ Pitch → frequency | Loudness → amplitude
- ✔ Speed of sound: $v = f \times \lambda$, fastest in solids
- ✔ Audible range: 20 Hz – 20,000 Hz

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