Chapter 2: Sound

MCQs;

1. What is the speed of sound in air at 20°C?

A) 1500 m/s
B) 340 m/s
C) 330 m/s
D) 500 m/s

Answer: B) 340 m/s

2. Which of the following is NOT a characteristic of sound waves?

A) Sound waves require a medium to travel.
B) Sound waves can travel through a vacuum.
C) Sound waves are longitudinal waves.
D) Sound waves transfer energy through vibrations.

Answer: B) Sound waves can travel through a vacuum

3. The frequency of a sound wave is measured in:

A) Decibels (dB)
B) Hertz (Hz)
C) Metres (m)
D) Seconds (s)

Answer: B) Hertz (Hz)

4. The pitch of a sound is determined by:

A) Amplitude
B) Frequency
C) Wavelength
D) Speed of sound

Answer: B) Frequency

5. What is the relationship between frequency and wavelength of sound?

A) Frequency is directly proportional to wavelength.
B) Frequency is inversely proportional to wavelength.
C) Frequency and wavelength are unrelated.
D) Wavelength is constant regardless of frequency.

Answer: B) Frequency is inversely proportional to wavelength

6. Which medium allows the fastest speed of sound?

A) Water

B) Air
C) Steel
D) Wood
Answer: C) Steel

7. What is the frequency range of the human ear?
A) 0-100 Hz
B) 20-20,000 Hz
C) 100-10,000 Hz
D) 20-100,000 Hz
Answer: B) 20-20,000 Hz

8. What is the unit of amplitude?
A) Decibels (dB)
B) Meters (m)
C) Hertz (Hz)
D) Newton (N)
Answer: B) Meters (m)

9. The phenomenon where sound waves are reflected back is called:
A) Refraction
B) Reflection
C) Diffraction
D) Absorption
Answer: B) Reflection

10. Which of the following increases the loudness of a sound?
A) Increase in amplitude
B) Increase in frequency
C) Decrease in amplitude
D) Decrease in frequency
Answer: A) Increase in amplitude

11. Which of these waves is an example of a longitudinal wave?
A) Light waves
B) Water waves
C) Sound waves
D) Radio waves
Answer: C) Sound waves

12. What happens when the frequency of sound waves increases?
A) The sound becomes softer.
B) The sound becomes higher pitched.
C) The sound becomes lower pitched.
D) The sound becomes louder.
Answer: B) The sound becomes higher pitched

13. What is the speed of sound in water?
A) 1500 m/s
B) 330 m/s
C) 1450 m/s
D) 500 m/s
Answer: A) 1500 m/s

14. The speed of sound depends on which of the following?
A) Frequency
B) Wavelength
C) Temperature and medium
D) Amplitude
Answer: C) Temperature and medium

15. What do we call the range of frequencies below 20 Hz?
A) Audible range
B) Ultrasonic
C) Infrasonic
D) Supersonic
Answer: C) Infrasonic

16. Which of the following best describes sound?
A) Transverse wave
B) Longitudinal wave
C) Electromagnetic wave
D) Matter wave
Answer: B) Longitudinal wave

17. Which of the following factors does NOT affect the speed of sound?
A) Temperature

B) Pressure
C) Medium density
D) Wavelength
Answer: D) Wavelength

18. The threshold of hearing is considered to be:
A) 0 dB
B) 20 dB
C) 40 dB
D) 100 dB
Answer: A) 0 dB

19. What type of wave is sound in the air?
A) Longitudinal wave
B) Transverse wave
C) Mechanical wave
D) Electromagnetic wave
Answer: A) Longitudinal wave

20. Which phenomenon is used in the working of an echo?
A) Reflection of sound
B) Refraction of sound
C) Diffraction of sound
D) Interference of sound
Answer: A) Reflection of sound

21. The loudness of a sound depends on:
A) Amplitude
B) Frequency
C) Wavelength
D) Medium
Answer: A) Amplitude

22. Which is the most accurate statement regarding sound in a vacuum?
A) Sound travels at a higher speed.
B) Sound does not travel at all.
C) Sound travels at a lower speed.
D) Sound travels, but with lower frequency.
Answer: B) Sound does not travel at all

23. An increase in the frequency of sound results in:
A) A decrease in amplitude
B) A decrease in pitch
C) A decrease in loudness
D) A higher-pitched sound
Answer: D) A higher-pitched sound

24. What is the human hearing range for frequency?
A) 20 Hz to 20,000 Hz
B) 10 Hz to 30,000 Hz
C) 30 Hz to 50,000 Hz
D) 15 Hz to 10,000 Hz
Answer: A) 20 Hz to 20,000 Hz

25. The phenomenon where sound waves bend around obstacles is known as:
A) Diffraction
B) Reflection
C) Absorption
D) Refraction
Answer: A) Diffraction

26. When a sound wave travels from air to water, which property remains unchanged?
A) Speed
B) Frequency
C) Wavelength
D) Amplitude
Answer: B) Frequency

27. What is the SI unit of sound intensity?
A) Watt (W)
B) Decibel (dB)
C) Hertz (Hz)
D) Newton (N)
Answer: B) Decibel (dB)

28. Which of the following is used to measure sound levels?
A) Thermometer

B) Barometer
C) Audiometer
D) Oscilloscope
Answer: C) Audiometer

29. Which phenomenon is used in musical instruments to produce sound?
A) Compression and rarefaction
B) Reflection
C) Diffraction
D) Electromagnetic waves
Answer: A) Compression and rarefaction

30. The term "Doppler effect" refers to:
A) Change in frequency due to the motion of the source or observer
B) Change in amplitude due to distance
C) Change in speed due to medium
D) Change in wavelength due to temperature
Answer: A) Change in frequency due to the motion of the source or observer

31. The wavelength of a sound wave is inversely proportional to:
A) Amplitude
B) Frequency
C) Speed
D) Temperature
Answer: B) Frequency

32. The term used to describe the bending of sound waves as they pass from one medium to another is:
A) Diffraction
B) Reflection
C) Refraction
D) Dispersion
Answer: C) Refraction

33. The unit of measurement for the intensity of sound is:
A) Hertz (Hz)
B) Decibels (dB)
C) Meters (m)
D) Newtons (N)

Answer: B) Decibels (dB)

34. What happens to the speed of sound when the temperature increases?
A) The speed of sound decreases.
B) The speed of sound increases.
C) The speed of sound remains unchanged.
D) The speed of sound becomes zero.
Answer: B) The speed of sound increases

35. Which of the following is used to increase the volume of sound in musical instruments like a guitar?
A) Resonance
B) Diffraction
C) Interference
D) Refraction
Answer: A) Resonance

36. What type of sound wave is produced by musical instruments?
A) Transverse waves
B) Longitudinal waves
C) Electromagnetic waves
D) Surface waves
Answer: B) Longitudinal waves

37. The Doppler effect can be heard when:
A) A train passes by at high speed.
B) A car horn blows in front of you.
C) A bird flies overhead.
D) Both A and B
Answer: D) Both A and B

38. Which of the following factors does NOT affect the pitch of sound?
A) Frequency
B) Amplitude
C) Speed of sound
D) Wavelength
Answer: B) Amplitude

39. Which material is the best conductor of sound?
A) Wood
B) Air
C) Steel
D) Water
Answer: C) Steel

40. The energy carried by a sound wave is related to its:
A) Frequency
B) Amplitude
C) Wavelength
D) Speed
Answer: B) Amplitude

41. Which part of the ear detects sound vibrations?
A) Eardrum
B) Cochlea
C) Ear canal
D) Auditory nerve
Answer: B) Cochlea

42. The speed of sound in a gas increases as:
A) The gas becomes denser
B) The temperature decreases
C) The gas becomes lighter
D) The gas becomes colder
Answer: C) The gas becomes lighter

43. When sound waves travel through a medium, they cause particles to move:
A) Transversely
B) Perpendicular to the direction of the wave
C) In a circular motion
D) Parallel to the direction of the wave
Answer: D) Parallel to the direction of the wave

44. Which of the following frequencies is considered ultrasonic?
A) 19,000 Hz
B) 20,000 Hz
C) 30,000 Hz

D) 10,000 Hz
Answer: C) 30,000 Hz

45. In which medium does sound travel the fastest?
A) Air
B) Water
C) Steel
D) Wood
Answer: C) Steel

46. The unit of measurement for the frequency of sound is:
A) Hertz (Hz)
B) Decibels (dB)
C) Newton (N)
D) Watt (W)
Answer: A) Hertz (Hz)

47. What is the wavelength of a sound wave if its frequency is 500 Hz and the speed of sound is 340 m/s?
A) 0.68 m
B) 0.68 cm
C) 0.68 km
D) 1.68 m
Answer: A) 0.68 m

48. Which of the following is true about sound waves in a vacuum?
A) Sound waves travel faster in a vacuum.
B) Sound waves do not travel in a vacuum.
C) Sound waves travel slower in a vacuum.
D) Sound waves are absorbed in a vacuum.
Answer: B) Sound waves do not travel in a vacuum

49. The ability of an object to vibrate in response to the frequency of a sound wave is known as:
A) Diffraction
B) Resonance
C) Interference
D) Reflection
Answer: B) Resonance

50. The frequency of sound waves is doubled. What happens to the wavelength?
A) It is doubled.
B) It is halved.
C) It remains the same.
D) It is quadrupled.
Answer: B) It is halved

51. Which of the following is an example of a high-frequency sound?
A) Drum beat
B) Low-pitched voice
C) Dog whistle
D) Thunder
Answer: C) Dog whistle

52. A sound wave with an amplitude of 0.1 m and frequency of 1000 Hz will have a wavelength of:
A) 0.34 m
B) 0.5 m
C) 0.68 m
D) 1.0 m
Answer: A) 0.34 m

53. The bending of sound waves around obstacles is known as:
A) Refraction
B) Diffraction
C) Reflection
D) Dispersion
Answer: B) Diffraction

54. Which of the following can be used to change the loudness of sound?
A) Frequency
B) Wavelength
C) Amplitude
D) Speed of sound
Answer: C) Amplitude

55. A sonic boom is produced when an object travels at:

A) Subsonic speed
B) Speed of sound
C) Supersonic speed
D) Hypersonic speed
Answer: C) Supersonic speed

56. The loudness of sound is measured in:
A) Hertz
B) Decibels
C) Meters
D) Watts
Answer: B) Decibels

57. What happens when sound waves move from a colder medium to a warmer one?
A) The speed of sound increases.
B) The speed of sound decreases.
C) The frequency of sound increases.
D) The wavelength decreases.
Answer: A) The speed of sound increases

58. Which of the following is NOT true about sound?
A) Sound waves are mechanical waves.
B) Sound can travel through a vacuum.
C) Sound waves can reflect off surfaces.
D) Sound is affected by the medium it travels through.
Answer: B) Sound can travel through a vacuum

59. A sound wave has a frequency of 1000 Hz. If the speed of sound is 340 m/s, the wavelength is:
A) 0.34 m
B) 1.7 m
C) 3.4 m
D) 0.68 m
Answer: D) 0.68 m

60. Which of the following is true for sound waves traveling through water?
A) They travel at the same speed as in air.
B) They travel faster than in air.
C) They travel slower than in air.

D) They do not travel in water.
Answer: B) They travel faster than in air

61. In which of the following situations will sound waves not be able to travel?
A) A mountain top
B) A vacuum
C) A forest
D) A room
Answer: B) A vacuum

62. The speed of sound in a medium depends on:
A) The temperature of the medium
B) The pressure of the medium
C) The density of the medium
D) All of the above
Answer: D) All of the above

63. In which condition is the speed of sound the highest?
A) In cold air
B) In dry air
C) In humid air
D) In water
Answer: D) In water

64. The process of sound waves spreading out after passing through a narrow opening is called:
A) Refraction
B) Reflection
C) Diffraction
D) Absorption
Answer: C) Diffraction

65. The ability to hear sound waves is due to:
A) Eardrum vibration
B) Cochlea's fluid motion
C) Auditory nerve stimulation
D) All of the above
Answer: D) All of the above

66. Which factor is NOT responsible for the pitch of a sound?
A) Frequency of vibration
B) Speed of sound
C) Amplitude of the sound wave
D) Size of the sound wave's source
Answer: C) Amplitude of the sound wave

67. The sharpness or clearness of a sound is known as:
A) Loudness
B) Pitch
C) Timbre
D) Intensity
Answer: C) Timbre

68. Which of the following is true for high-frequency sounds?
A) They have a longer wavelength.
B) They have a lower pitch.
C) They have a higher pitch.
D) They travel slower.
Answer: C) They have a higher pitch

69. Which is the primary reason why sound waves travel faster in steel than in air?
A) Air has a lower temperature.
B) Steel is denser than air.
C) Steel is less dense than air.
D) Steel has a higher frequency.
Answer: B) Steel is denser than air

70. What happens to the amplitude of sound waves if their loudness is increased?
A) The amplitude decreases.
B) The amplitude increases.
C) The wavelength decreases.
D) The frequency decreases.
Answer: B) The amplitude increases

71. The frequency of a sound wave is doubled. What happens to its pitch?
A) It becomes lower.
B) It becomes higher.

C) It remains unchanged.
D) It becomes constant.
Answer: B) It becomes higher

72. Which of the following is a method of controlling sound?
A) Absorption
B) Diffusion
C) Reflection
D) All of the above
Answer: D) All of the above

73. What does the decibel scale measure?
A) Frequency
B) Loudness
C) Pitch
D) Speed
Answer: B) Loudness

74. What is the effect of sound traveling through different materials?
A) Sound travels faster in denser materials.
B) Sound travels slower in denser materials.
C) Sound travels at the same speed in all materials.
D) Sound does not travel in denser materials.
Answer: B) Sound travels slower in denser materials

75. The process of sound waves bouncing off a surface is known as:
A) Refraction
B) Reflection
C) Diffraction
D) Absorption
Answer: B) Reflection

76. Which is NOT a factor that affects sound propagation?
A) Temperature
B) Medium
C) Frequency
D) Sound intensity
Answer: D) Sound intensity

77. What is the frequency of a sound wave if its wavelength is 0.34 m and the speed of sound is 340 m/s?
A) 100 Hz
B) 200 Hz
C) 1000 Hz
D) 340 Hz
Answer: A) 1000 Hz

78. Which is the phenomenon of sound bending around corners or obstacles?
A) Refraction
B) Diffraction
C) Reflection
D) Absorption
Answer: B) Diffraction

79. Which of the following does NOT affect the loudness of sound?
A) Amplitude
B) Distance from the source
C) Frequency
D) Medium
Answer: C) Frequency

80. Which of the following best describes the relationship between frequency and wavelength?
A) They are inversely proportional.
B) They are directly proportional.
C) Frequency equals wavelength.
D) They are unrelated.
Answer: A) They are inversely proportional