Unit 13: Sound

59 MCQs. Correct option in bold. 1 mark each.

1. Sound waves are
A. transverse waves | B. surface waves only
C. longitudinal waves | D. electromagnetic waves

2. Sound waves cannot travel through
A. vacuum | B. air | C. steel | D. water

3. The speed of sound at 0 °C deduced by the French Academy was about
A. 3×10^8 m/s | **B. 332 m/s**
C. 5000 m/s | D. 1500 m/s

4. In a compression, the pressure is
A. negative | B. low | C. zero | **D. high**

5. In a rarefaction, the pressure is
A. high | B. zero | **C. low** | D. infinite

6. The amplitude of a sound wave tells about the
A. speed of the wave | B. pitch of the wave
C. colour of the sound | **D. energy carried by the wave**

7. The human audible range of frequencies is
A. 2 Hz to 2000 Hz | **B. 20 Hz to 20,000 Hz**
C. 0 Hz to 20 Hz | D. 200 Hz to 200,000 Hz

8. Sound waves with frequency less than 20 Hz are called
A. infrasonic waves | B. supersonic waves
C. audible waves | D. ultrasonic waves

9. Sound waves with frequency greater than 20,000 Hz are called
A. audible waves | B. subsonic waves
C. ultrasonic waves | D. infrasonic waves

10. A silent whistle used to train a dog has a frequency
A. less than 20 Hz
B. greater than 20,000 Hz
C. of 20 Hz
D. less than 20,000 Hz and greater than 20 Hz

11. Ultrasound is used in
A. prenatal scanning | B. heating water
C. communication by elephants | D. making X-rays

12. In ultrasonic cleaning, high-frequency sound waves create
A. magnetic fields
B. heat that dissolves dirt
C. bright light
D. tiny bubbles that implode and clean the surface

13. In medical scanning, the device that sends and receives high-frequency sound is a
A. oscilloscope | **B. transducer**
C. transformer | D. thermometer

14. SONAR stands for
A. Sound Noise and Radar | B. Signal Navigation and Ranging
C. Sound Navigation and Ranging | D. Sound Network and Rating

15. A ship's sound wave returns after 14.7 s in the sea (speed 1500 m/s). The depth is
A. 11,025 m | B. 5,512 m | C. 22,050 m | D. 110 m

16. Sonar signal with speed 1550 m/s returns after 5.3 s. The depth of the sea is
A. 2053.7 m | B. 8215 m | C. 292 m | **D. 4107.5 m**

17. Infrasound is produced by
A. dog whistles
B. earthquakes, volcanic eruptions and explosions
C. ultrasound scanners
D. bats

18. The three main characteristics of sound are
A. speed, amplitude and colour | B. pitch, speed and wavelength
C. pitch, loudness and quality | D. loudness, colour and shape

19. A high pitched sound has
A. a high frequency | B. a large amplitude
C. a low frequency | D. a low amplitude only

20. Loudness is measured on the basis of the
A. frequency of the sound wave | B. wavelength of the sound wave
C. speed of the sound wave | **D. amplitude of the sound wave**

21. Loudness level is measured in
A. metres | **B. decibels**
C. hertz | D. watts only

22. Pitch is independent of the
A. shrillness | B. frequency
C. vibrations per second | **D. energy received by the ear per unit time**

23. The quality or timbre of sound helps to distinguish between two sounds having the same
A. loudness and pitch | B. medium
C. speed | D. amplitude only

24. Quality of sound depends on the
A. speed only | B. frequency only
C. waveform | D. amplitude only

25. Sounds from a piano or violin produce on the oscilloscope
A. simple sine waves | B. straight lines
C. no waveform | **D. complex waveforms**

26. The speed of sound in air is approximately
A. 330 to 350 m/s | B. 3300 to 3500 m/s
C. 3 to 5 m/s | D. 33 to 35 m/s

27. In air, the speed of sound increases with
A. increase in amplitude | **B. increase in temperature**
C. decrease in temperature | D. increase in loudness

28. The speed of sound is fastest in
A. liquids | B. gases | **C. solids** | D. vacuum

29. The speed of sound is slowest in
A. gases | B. solids | C. liquids | D. steel

30. The speed of sound in steel is over
A. 50 m/s | B. 1500 m/s | **C. 5000 m/s** | D. 340 m/s

31. The speed of sound in water is approximately
A. 340 m/s | **B. 1500 m/s** | C. 150 m/s | D. 5000 m/s

32. If the frequency of sound is doubled, the speed of sound will
A. become half | B. become double
C. become four times | **D. remain the same**

33. Which is NOT true for sound?
A. Sound is a compressional and longitudinal wave
B. Sound is produced by a vibrating body
C. Sound transfers energy along with matter of the medium
D. Sound travels due to variation of pressure in air

34. Sound travels fastest in
A. steel | B. water | C. rubber | D. air

35. Sound travels from water to an iron rod, then into air and back into water. The speed will successively
A. decrease, increase, decrease | **B. increase, decrease, increase**
C. increase, increase, increase | D. decrease, decrease, decrease

36. We see lightning before we hear thunder because
A. light travels slower | B. sound travels faster than light
C. thunder is produced later | **D. light travels much faster than sound**

37. A boy hears thunder 3.0 s after seeing lightning (speed of sound 343 m/s). The distance to lightning is about
A. 343 m | B. 3 km | **C. 1 km** | D. 114 m

38. Noise is a sound that is
A. always ultrasonic | **B. non-rhythmic and unpleasant**
C. always infrasonic | D. rhythmic and pleasant

39. Reflection of sound occurs when sound
A. bounces back from a surface | B. bends around a corner
C. is absorbed | D. changes speed in a medium

40. Sound waves change direction as they pass through layers of air with varying temperature. This is
A. diffraction | B. reflection
C. absorption | **D. refraction**

41. When sound bends around obstacles or spreads out through small openings, it is called
A. reflection B. refraction
C. diffraction D. echo

42. An echo is a reflected sound that
A. is louder than the original
B. can be distinguished from the original sound
C. cannot be distinguished from the original sound
D. has a higher pitch

43. Human ear can perceive two separate sounds if the time gap between them is at least
A. 0.1 s B. 1 s C. 0.01 s D. 10 s

44. The minimum distance of a person from an obstacle to hear an echo (speed 340 m/s) is
A. 34 m B. 0.1 m C. 50 m **D. 17 m**

45. A boy hears an echo after 1.2 s (speed of sound 346 m/s). The distance of the cliff is
A. 288 m B. 415.2 m **C. 207.6 m** D. 103.8 m

46. A tourist hears an echo after 5 s (speed of sound 344 m/s). The cliff is at a distance of
A. 1720 m B. 430 m C. 68.8 m **D. 860 m**

47. Reverberation is the
A. overlapping of sound caused by multiple reflections
B. bending of sound
C. change in the speed of sound
D. absorption of sound

48. Acoustic protection means using _____ to absorb unwanted sounds.
A. metal sheets only **B. soft and porous materials**
C. glass panels D. hard smooth surfaces

49. Soft materials on classroom walls are used to
A. stop all sound B. increase reverberation
C. increase echo **D. reduce echo**

50. In acoustics, bass traps are used to control
A. low-frequency sounds B. high-frequency sounds
C. ultrasound D. light

51. The three main parts of the human ear are
A. outer ear, auditory nerve and cochlea **B. outer ear, middle ear and inner ear**
C. middle ear, eardrum and auditory nerve D. inner ear, cochlea and eardrum

52. The three tiny bones in the middle ear are called
A. cochleae B. nerves **C. ossicles** D. membranes

53. The sound entered in the ear is amplified by the
A. eardrum B. cochlea C. brain **D. ossicles**

54. In the cochlea, vibrations are converted into electrical signals by
A. ossicles B. skin
C. hair cells D. eardrum

55. Electrical signals from the cochlea go to the brain through the
A. vocal cords **B. auditory nerve**
C. spinal cord D. optic nerve

56. Excessive use of earphones at high volume can lead to
A. noise-induced hearing loss B. improved balance
C. infrasound D. better hearing

57. A physician counts 69 heartbeats in 1 minute. The frequency of the heartbeat is
A. 4140 Hz B. 69 Hz **C. 1.15 Hz** D. 0.87 Hz

58. The wavelength of a 20 kHz sound wave at 343 m/s is
A. 0.01715 m B. 0.1715 m C. 6.86 m D. 17.15 m

59. A sound wave in seawater has speed 1500 m/s and wavelength 45 cm. Its frequency is
A. 675 Hz **B. 3333.3 Hz** C. 6.75 Hz D. 33.3 Hz