

ADDITIONAL QUESTIONS

I. OBJECTIVE TYPE QUESTIONS

1. Multiple Choice Questions

1. Mechanical waves can be:

- (a) longitudinal only
- (b) transverse only
- (c) both longitudinal and transverse
- (d) neither longitudinal nor transverse

2. A mechanical wave is produced through a medium:

- (a) when particles of the medium vibrate
- (b) due to heat
- (c) due to light
- (d) due to electricity

3. A mechanical wave should possess:

- (a) speed
- (b) amplitude
- (c) wavelength
- (d) both inertia and elasticity

4. The speed of sound is largest in:

- (a) solid
- (b) gas
- (c) liquid
- (d) vacuum

5. The waves in rocks (i.e., earth) are of the form of:

- (a) longitudinal elastic waves only
- (b) transverse elastic waves only
- (c) both longitudinal and transverse elastic waves
- (d) none of these

6. Which one of the following statements is false:

- (a) The speed of sound in air increases with temperature
- (b) The speed of sound in air decreases with humidity
- (c) The speed of sound in a medium is independent of the density of the medium
- (d) The speed of sound in pressure has no effect on the speed of sound

7. When a person is on Moon, he cannot hear the horn of a car. The correct explanation is:

- (a) the density of moon atmosphere is low

- (b) the speed of sound is high
- (c) the speed of sound is low
- (d) sound cannot travel in vacuum

8. While travelling through air at a constant temperature, which one of the following remains unchanged:

- (a) wavelength
- (b) frequency
- (c) amplitude
- (d) speed

9. The loudness of sound depends on its:

- (a) wavelength
- (b) frequency
- (c) amplitude
- (d) speed

10. Pitch of a sound depends on its:

- (a) amplitude
- (b) periodicity and regularity
- (c) wavelength
- (d) frequency

11. Of the following, the one which emits sound of highest pitch is:

- (a) lion
- (b) dog
- (c) frog
- (d) mosquito

12. Wavelength of ultrasonic waves in air is of the order of:

- (a) 200 m
- (b) 5×10^{-5} m
- (c) 5×10^{-3} m
- (d) 5×10^{-1} m

13. A wave is travelling from a cross in air. If the wavelength is 5 m, the speed is:

- (a) zero
- (b) 500 m/s
- (c) 400 m/s
- (d) 300 m/s

14. A sound wave goes from air into water; the quantity that remains unchanged is:

- (a) wavelength

- (b) velocity
- (c) frequency
- (d) amplitude

15. The audible sound of human beings:

- (a) very low
- (b) low
- (c) medium
- (d) very high

16. The frequency 2.5 mm, the wavelength of adult's voice is 0.2 m, then the frequency of child's voice is:

- (a) 50 Hz
- (b) 25 Hz
- (c) 400 Hz
- (d) 200 Hz

17. A sound of frequency 5 Hz is:

- (a) very loud
- (b) inaudible
- (c) low pitched
- (d) moves very slowly

18. The distance from crest to crest of any wave is:

- (a) frequency
- (b) amplitude
- (c) wavelength
- (d) time

19. The speed of sound waves in air having frequency of 512 Hz is:

- (a) 200 m/s
- (b) 300 m/s
- (c) 400 m/s
- (d) twice as great

20. The distance between two crests is 6 m. The speed of the wave is 360 m/s. The frequency is:

- (a) 50 Hz
- (b) 60 Hz
- (c) 70 Hz
- (d) 40 Hz

21. A boat in another rooked by waves whose crests are 2.5 m apart reach the boat once

every:

- (a) 2.5 s
- (b) 0.5 s
- (c) 15 s
- (d) 20 s

22. A man standing at one end of a valley hears 5.25 m/s. If the echo reaches him after 3 s, the distance:

- (a) 1500 m
- (b) 1000 m
- (c) 2000 m
- (d) 3000 m

23. Time period of the above disturbance is:

- (a) 2 s
- (b) 1 s
- (c) 0.5 s
- (d) 1.5 s

24. Wavelength of the above disturbance is:

- (a) 500 m
- (b) 250 m
- (c) 2000 m
- (d) 3000 m

25. Which one of the following is NOT a correct statement?

- (a) Sound is produced by vibrating objects
- (b) Sound travels as waves
- (c) Sound waves can be produced in liquids
- (d) Sound waves are longitudinal waves

26. A fresh water dolphin sends ultrasound sound to locate prey. If it reaches the dolphin is:

- (a) 90 m
- (b) 900 m
- (c) 9 m
- (d) 0.9 m

27. When air temperature increases, the wavelength of sound in air:

- (a) remains the same
- (b) increases
- (c) decreases
- (d) increases four times

28. A tuning fork vibration with frequency of 256 Hz. If the temperature rises from 20°C, the speed of sound increases approximately by:

- (a) 0.6 m
- (b) 0.1 m
- (c) 0.3 m
- (d) 1 m

29. Sound is produced by:

- (a) Utilising
- (b) Chemical energy
- (c) Heat energy
- (d) Vibrations

30. What one of the following is correct statement?

- (a) Sound cannot travel through solids
- (b) Honey bee vibrates its wings 1000 times in a second
- (c)
- (d) An ordinary housefly vibrates its wings about 60

31. The speed of sound in air = 340 m/s. The wavelength is about 0.17 m when the frequency is:

- (a) 1000 Hz
- (b) 3000 Hz
- (c) 500 Hz
- (d) 200 Hz

32. A person sitting on a clock observes the set of resonating objects which have identical frequency of the minute hand of a wall clock after every 4 s. The frequency of the wave is:

- (a) 0.25 Hz
- (b) 0.5 Hz
- (c) 0.75 Hz
- (d) 1 Hz

33. In the above question, the speed of the wave is:

- (a) 4 m/s
- (b) 2 m/s
- (c) 0.4 m/s
- (d) 0.8 m/s

34. A vibrating source produces sound; its frequency lies between 20 Hz and 20 kHz.

35. Which one of the following is NOT a correct statement?

- (a) A sound wave with frequency of 15 Hz lies in the audible range

- (b) Hearing is most accurate in the range of 1000–3000 Hz
- (c) The threshold of hearing is 1 kHz
- (d) At low intensity of 1 W/m^2 , the sound is uncomfortably loud

36. A dog can hear the upper limit of frequency up to:

- (a) 20 Hz
- (b) 20 kHz
- (c) 25 kHz
- (d) 30 kHz

37. Ultrasounds are longitudinal waves whose frequencies are:

- (a) Below 200 Hz
- (b) 20–500 Hz
- (c) 20 kHz to 500 kHz
- (d) 2000 Hz to 4000 Hz

38. The time interval between the incident sound and the reflected sound to hear a distinct echo is:

- (a) 0.01 s
- (b) 0.001 s
- (c) 0.1 s
- (d) 0.2 s

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40. An audible wave is 1.7 cm; when the sound is traveling is 583 m. If its wavelength is 1.5 cm, then:

- (a) Its frequency is 20 Hz
- (b) Its frequency is 2000 Hz
- (c) Its frequency is 22600 Hz
- (d) Its audible

41. In the reflection of sound ____ is not the requirement?

- (a) Rigid obstacle
- (b) Smooth
- (c) Long
- (d) Hard

42. In seas & oceans, sound waves produced by vibrating objects travel through:

- (a) solids
- (b) liquids
- (c) gases
- (d) none

43. The distance of the reflecting surface from the source is:

- (a) 17.2 m
- (b) 34.4 m
- (c) 51.30 m
- (d) 51.38 m

II. ASSERTION–REASON TYPE QUESTIONS

44. Assertion: Sound is produced due to vibrations of different objects.

Reason: Sound travels in vacuum.

45. Assertion: Sound energy is a form of energy.

Reason: It is the hearing response of the ear to the intensity of sound.

46. Assertion: Noise is any event which gives meaning to the term loudness.

Reason: It is unpleasant effect on ear.

47. Assertion: The frequency of wave satisfies pleasant effect.

Reason: The frequency never changes when wave is reflected on a hard surface.

48. Assertion: Waves are generally reflected by a soft surface.

Reason: Wave having frequency below 20 Hz are called infrasonic.

49. Assertion: Longitudinal waves whose frequency are below 20 Hz are called infrasonic.