

## MCQ: Basics of Sound, Ultrasonics

1. Choose the correct answer out of following.

- (a) Speed of sound waves is constant in vacuum
- (b) **Speed of sound waves in dense medium is greater than rare medium**
- (c) Speed of sound waves in rare medium is greater than dense medium
- (d) Speed of sound in any medium is independent of temperature

2. What is the frequency range of sound audible to humans?

- (a) 20 kHz to 20 MHz
- (b) 20 Hz to 20 MHz
- (c) **20 Hz to 20 kHz**
- (d) 20 kHz to 20 GHz

3. What is true regarding the speed of sound in vacuum?

- (a) Speed of sound in vacuum is a constant quantity
- (b) Speed of sound in vacuum is variable
- (c) Speed of sound is equal to speed of light in vacuum
- (d) **Sound cannot travel in vacuum**

4. When sound travels through air, the air particles \_\_\_\_

- (a) **vibrate along the direction of wave propagation**
- (b) vibrate but not in any fixed direction
- (c) vibrate perpendicular to the direction of wave propagation
- (d) do not vibrate

5. Sound waves do not travel through

- (a) Solids

(b) Liquids

(c) Gases

**(d) Vacuum**

6. Sound waves are

(a) Transverse

**(b) Longitudinal**

(c) Partly longitudinal and partly transverse

(d) Sometimes longitudinal and sometimes transverse

7. The frequency which is not audible to the human ear is

(a) 50 Hz

(b) 500 Hz

(c) 5000 Hz

**(d) 50000 Hz**

8. The speed of sound in medium depends upon

**(a) Properties of the medium**

(b) Amplitude

(c) Frequency

(d) Wavelength

9. Which of the following quantities is transferred during wave propagation?

(a) Speed

(b) Mass

(c) Matter

**(d) Energy**

10. The relation between wave velocity ' $v$ ', frequency ' $f$ ', and wavelength ' $\lambda$ ' is \_\_\_\_

(a)  $v = n / \lambda$

(b)  $v = \lambda / n$

**(c)  $v = n \lambda$**

(d)  $v = 1/\lambda n$

11. A sound source sends waves of 400 Hz. It produces waves of wavelength 2.5

m. The velocity of sound waves is

(a) 100 m/s

**(b) 1000 m/s**

(c) 10000 m/s

(d) 3000 km/s

12. Sound waves show which of the following properties?

(a) Reflection

(b) Refraction

(c) Diffraction

**(d) All of above**

13. The number of vibrations of the particles of a medium through which sound wave travels in one second is known as

(a) Wave velocity

**(b) Frequency**

(c) Time period

(d) One wave

14. The time required by a particle in a medium through which sound wave is traveling to complete one vibration is

**(a) Time period**

(b) Frequency

(c) Amplitude

(d) Wavelength

15. The distance traveled by a sound wave in one time period is \_\_\_\_\_ a

**(a) Wavelength**

(b) Amplitude

(c) Velocity

(d) Intensity

16. The maximum displacement of a particle of the medium through which sound is traveling is b

(a) Wavelength

**(b) Amplitude**

(c) Velocity

(d) Displacement

17. Wavelength of sound is d

(a) Distance traveled by the sound wave during one vibration of a particle

(b) Distance between two adjacent compressions

(c) Distance between two adjacent rarefaction

**(d) All the above**

18. A sound wave of wavelength 10 cm traveling with a speed of 340 m/s has c frequency of

(a) 34 Hz

(b) 340 Hz

**(c) 3400 Hz**

(d)  $1/34$  Hz

19. A sound wave of wavelength 10 cm traveling with a speed of 340 m/s has time period is

(a)  $1/34$  s

**(b)  $1/3400$  s**

(c) 3400 s

(d) 34 s

20. The distance traveled by sound wave of frequency 3.4 kHz traveling with a speed of 340 m/s in one time period is \_\_\_\_\_ m

(a) 100

**(b) 10**

(c) 1

(d) 0.1

21. The amplitude of sound wave of frequency 3.4 kHz traveling with a speed of 340 m/s is \_\_\_\_\_ d

(a) 100

(b)  $1/100$

(c) 1

**(d) None of above**

22. When a sound wave of wavelength 10 cm travels with a speed of 340 m/s the particles of the medium vibrate at the rate of \_\_\_\_\_ vibrations per second

(a) 34

(b) 340

**(c) 3400**

(d)  $1/34$

23. When a sound wave of wavelength 10 cm travels with a speed of 340 m/s the particles of the medium take \_\_\_\_\_ seconds to complete one vibration

(a)  $1/34$

**(b)  $1/3400$**

(c) 3400

(d) 34

24. A sound wave of wavelength 10 cm traveling with a speed of 340 m/s covers a distance in one second c

(a) 1

(b) 34

**(c) 340**

(d) 3400

25. Which of the following quantities is transferred during wave propagation? a

(a) Energy

(b) Speed

(c) Mass

(d) Matter

26. A sound vibrator is making 100 vibrations in one second. The frequency of sound produced is

(a) 3400 Hz

(b) 340 Hz

**(c) 100 Hz**

(d) 1000 Hz

27. Sound waves of frequency less than 20 Hz is known as

(a) Ultrasonic

(b) Audible

**(c) Infrasonic**

(d) Supersonic

28. Sound waves of frequency more than 20 kHz are known as a

**(a) Ultrasonic**

(b) Audible

(c) Infrasonic

(d) Supersonic

29. Speed exceeding the speed of sound is known as d

(a) Ultrasonic

(b) Audible

(c) Infrasonic

**(d) Supersonic**

30. Higher frequency sound is said to have higher

(a) Loudness

**(b) Pitch**

(c) Timbre

(d) Intensity

31. The wavelength of sound wave of frequency 6.8 kHz traveling with a speed of 340 m/s is

(a) 20 m

(b) 2 m

**(c) 0.05 m**

(d) 0.5 m

32. When pressure is applied to two opposite faces of a crystal like quartz, equal and opposite charges develop on a pair of perpendicular faces. This effect is called as

(a) Magnetostriction effect

**(b) Piezoelectric effect**

(c) Inverse piezoelectric effect

(d) Electromagnetic induction

33. When potential difference is applied to two opposite faces of a crystal like quartz, there is either compression or expansion of the crystal across a Perpendicular axis. This effect is known as

(a) Magnetostriction effect

(b) Piezoelectric effect

**(c) Inverse piezoelectric effect**

(d) Electromagnetic induction

34. In piezoelectric effect a

**(a) A potential difference is developed across certain crystals on applying pressure**

(b) There is deformation of crystal on applying potential difference

(c) There is change in length of ferromagnetic substance in magnetic field

(d) There is induced e.m.f. due to change in magnetic flux

36. Ultrasonic waves carry more

a. energy only

b. frequency only

c. heat

**d. energy and frequency**

37. The wavelength of ultrasonic waves is

a. more than audible sound

**b. less than audible sound**

c. equal to audible sound



d.greater than light wave