EXERCISE # 1

A Very Short Answer Type Questions

Q.1 At what position the velocity of the bob of an oscillating simple pendulum is maximum and where is it minimum ?

Q.2 What is transferred by wave motion from one point to the other– matter or energy ?

Q.3 What are the SI units of wavelength and frequency of a wave ?

Q.4 Define velocity of a wave.

Q.5 What is the separation between two successive crests and troughs ?

Q.6 What is the speed of electromagnetic waves?

Q.7 A simple pendulum completes 20 oscillations in 10 seconds. Calculate its time period.

Q.8 If the distance between the two extreme positions of a simple pendulum is 3 cm, what is its amplitude ?

Q.9 When a wire of sitar is plucked, what type of waves are produced in (i) the wire and (ii) air ?

Q.10 What is the relation between time period and frequency.

B Short Answer Type Questions

Q.11 Why does the motion of a simple pendulum stop?

Q.12 Can two persons hear each other on moon ? Explain with reason.

Q.13 A ship sends a signal and receives it back from a submarine after 5s. Speed of sound in water is 1450 m/s. Calculate distance of submarine from the ship.

Q.14 What are ultrasonic waves and infrasonic waves?

Q.15 Explain working of a sonar.

Q.16 Explain industrial uses of ultrasonic waves.

Q.17 On what principle does a megaphone works?

Q.18 What type of scans are used these days to see the developing baby in the uterus ?

Q.19 A worker lives at a distance of 1.32 km from the factory. If the speed of sound in air be 330 m/s, how much time will the sound of factory siren take to reach the worker ?

Q.20 The flash of a gun is seen by man 3 seconds before the sound is heard. Calculate the distance of the gun from the man (speed of sound in air is 332 m/s).

Q.21 State the general name of the waves in which the particles of the medium vibrate :
(i) in the same direction as wave.
(ii) at right angles to the direction of wave.

Q.22 Calculate the wavelength of an ultrasonic wave of frequency 10^5 Hz. The velocity of sound is 330 m/s.

Q.23 Two sound waves in air have wavelengths ratio 1 : 3. Find their frequency ratio.

Q.24 The wavelength of a sound wave is 66 m. Calculate the frequency of the wave if the velocity of sound is 330 m/s, would this sound be audible to the human ear ?

Q.25 If the period of small ripples on water is 0.1 s and their wavelength is 5 cm, what is the speed of the waves ?

Q.26 Longitudinal waves travel in a coiled spring at a rate of 4 ms^{-1}. The distance between two consecutive compressions is 20 cm. Find (i) the wave length and (ii) frequency of the wave.

C Long Answer Type Questions

Q.27 Define transverse waves and longitudinal waves. State the main difference between them.

Q.28 What is sound ? What is the cause of every sound ? Give some examples of sources producing sound.

Q.29 What do you mean by reflection of sound ? Briefly explain some applications of reflection of sound.

Q.30 Define the following terms : wavelength, time period, frequency and velocity of a wave.

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EXERCISE # 2

Single correct answer type questions

Q.1 A sound wave travels from east to west, in which direction do the particles of air move–
(A) East-west (B) North-south
(C) Up and down (D) None of these

Q.2 In which medium sound travels faster–
(A) solid (B) liquid
(C) gas (D) none of these

Q.3 What is the name of short duration wave–
(A) Pulse (B) Frequency
(C) Time period (D) Velocity

Q.4 What is the velocity of sound in water at room temperature–
(A) 1500 m/s (B) 330 m/s
(C) 1500 km/s (D) 330 km/s

Q.5 The unit of quantity on which pitch of the sound depends is–
(A) Hertz (B) metre
(C) metre/second (D) second

Q.6 The unit of quantity on which loudness of sound depends is–
(A) metre (B) Hertz
(C) metre/second (D) second

Q.7 Nature of sound wave is–
(A) transverse (B) longitudinal
(C) electromagnetic (D) seismve

Q.8 Pitch of high frequency sound is–
(A) high (B) low
(C) zero (D) infinite

Q.9 Voice of a friend is recognised by its–
(A) pitch (B) quality
(C) intensity (D) velocity

Q.10 Sound waves in air are–
(A) longitudinal waves
(B) Radio waves
(C) Transverse waves
(D) Electromagnetic waves

Q.11 Sound waves can not pass through–
(A) A solid liquid mixture
(B) A liquid gas mixture
(C) An ideal gas
(D) A perfect vaccum

Q.12 A periodic wave is characterized by–
(A) Phase only (B) Wavelength only
(C) Frequency only (D) All the above

Q.13 The speed of sound is maximum in–
(A) Air (B) Hydrogen
(C) Water (D) Iron

Q.14 When sound waves travelling in air enter into the medium of water, the quantity which remains unchanged is–
(A) Wavelength (B) Velocity
(C) Frequency (D) None

Q.15 For the echo of the last syllable of the speech to be heard the least distance of the reflector must be (approximately)–
(A) 22 metre (B) 32 metre
(C) 110 metre (D) 340 metre

Q.16 During summer, an echo is heard–
(A) Sooner than during winter
(B) Later than during winter
(C) After same time as in winter
(D) Rarely

Q.17 The velocity of sound in air at 30°C is approximately–
(A) 332 ms^{-1} (B) 350 ms^{-1}
(C) 530 ms^{-1} (D) 332 kms^{-1}

Q.18 With the rise of temperature, the velocity of sound–
(A) Decreases
(B) Increases
(C) Remains the same
(D) Is independent of temperature

Q.19 Infrasonic frequency range is–
(A) below 20 Hz (B) 20 Hz to 20 kHz
(C) Above 20 kHz (D) No limit

Q.20 Ultrasonic frequency range is–
(A) below 20 Hz (B) 20 Hz to 20 kHz
(C) Above 20 kHz (D) No limit

Q.21 The speed of sound in air at constant temperature–
(A) Decreases with increase of pressure
(B) Increases with increase of pressure
(C) Remains the same with the increase in pressure
(D) None of these

Q.22 The frequency of sound waves in water is –
(A) Same as that of frequency of source
(B) Less than frequency of source
(C) More than frequency of source
(D) None

Q.23 The equipment (device) used for locating the position and distance of an object inside sea, using ultrasound is called–
(A) Pukar (B) Upkar
(C) Radar (D) Sonar

Q.24 Human ear can hear–
(A) audible sound (B) infra sound
(C) ultra sound (D) all the above

Q.25 A sonar echo takes 4.4s to return from a submarine. If the speed of sound in water is 1500 ms^{-1}, then the distance of submarine from the sonar is-
(A) 1500 m (B) 3000 m
(C) 3300 m (D) 3600 m

Q.26 The eardrum is a–
(A) bone (B) coiled tube
(C) stretched membrane (D) fluid

Q.27 The part of the ear, that is filled with a liquid is the –
(A) cochlea (B) ear canal
(C) anril (D) hammer

Q.28 A fishing boat sonar detects a shoal of fish 190 m below it. How much time elapsed between sending the ultra sonic signal which detected the fish and receiving the signals echo ? (speed of sound in sea water is 1519 ms^{-1})–
(A) 0.25 s (B) 0.50 s
(C) 0.75 s (D) 1.0 s

ANSWER KEY

EXERCISE-2

Ques	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans	A	A	A	A	A	A	B	A	B	A	D	D	D	C	A
Ques	16	17	18	19	20	21	22	23	24	25	26	27	28		
Ans	A	B	B	A	C	C	A	D	A	C	C	A	A		