MODERN SCIENCE ACADEMY

11. "SOUND"

Sr.	Statements	A	B	C	D
1	Which is an example of longitudinal wave?	sound wave	light wave	radio wave	water wave
2	How does sound travel from its source to your ear?	by changes in air	by vibrations in wires or strings	by electro-magnetic waves	by infrared waves
3	Which form of energy is sound?	electrical	mechanical	thermal	chemical
4	The loudness of a sound is more closely related to:	period	frequency	amplitude	wavelength
5	For a normal person, audible frequency range for sound waves lie between:	10 Hz- 10 kHz	20 Hz- 20 kHz	25 Hz- 25 kHz	30 Hz- 30 kHz
6	Unit of intensity of sound is:	Wm	Wm^{-1}	Wm^{-2}	$W^{-1}m^{-2}$
7	To distinguish between shrill and grave sound:	quality	intensity	pitch	loudness
8	The intensity of rustle of leaves is:	0 dB	10 dB	20 dB	100 dB
9	1 bel=	0 dB	10 dB	50 dB	100 dB
10	Sound level in dB is given by:	$\log\frac{I}{I_o}$	$\log\frac{I_o}{I}$	$10\ \log\frac{I}{I_o}$	$10\ \log\frac{I_o}{I}$
11	Speed of sound in air at 0°C is 332 m/s. What is its speed in vacuum?	equal to 332 ms^{-1}	greater than 332 ms^{-1}	less than 332 ms^{-1}	zero
12	The characteristic of sound by which we can distinguish between two sounds of same loudness and pitch is called:	quality	intensity	pitch	loudness
13	Speed of sound is greater in:	gases	liquids	solids	same in all
14	Threshold of hearing has _____ intensity level.	0 dB	10^{-12} dB	120 dB	1 dB
15	Frequency of sound waves in air is doubled, its speed will:	become half	become double	become four times	remains same
16	Sound waves having frequency _____ are called infrasonic waves.	greater than 20 Hz	less than 20 Hz	20 Hz	Greater than 20 kHz
17	Minimum distance of a person from obstacle for sound to hear echo is:	17 m	34 m	0.1 m	above 50 m
18	Which of the following property of wave is directly related with loudness of sound?	frequency	wavelength	speed	amplitude
19	Intensity of threshold of pain (loudest audible sound without pain to ears):	$10^{-12}\ Wm^{-2}$	$10\ Wm^{-2}$	$10^{12}\ Wm^{-2}$	$1\ Wm^{-2}$
20	Silent whistle is used to train dogs. When trainer blow the whistle, human beings don't hear it but dogs do listen. Its possible frequency is:	greater than 20 Hz	less than 20 Hz	20 Hz	Greater than 20 kHz
21	Intensity of a sound wave increases by 1000 Wm^{-2}. What is this increase equal to in dB?	10	20	30	40
22	Minimum echo distance is reduced in:	summer	winter	spring	space
23	The speed of sound on a warm day when the outdoor temperature is 38 °C is:	331 m/s	345 m/s	355 m/s	362 m/s
24	Compared with a sound of 60 dB , a sound of 80 dB has an intensity _____ times greater.	10	100	1000	10,000

"Important Short Questions"

1) Define sound. What is necessary condition for the production of sound?
2) Vibrating body produces sound. When a pendulum vibrates, we don't hear its sound. Why?
3) Why does sound travel faster in solids than liquids and gases?
4) When you watch a thunderstorm, you see the lightning first, and you hear the thunder afterward. Why is the thunder delayed?
5) In which medium air or water, an echo heard sooner. Why?

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6) If a person places his ear on rails of railroad for determination of coming train. Why is this done, and how does it work?
7) How can you prove mechanical nature of sound by a simple experiment?
8) Why sound cannot be heard on moon?
9) What is “silent whistle”?
10) What are longitudinal waves? Describe the longitudinal nature of sound waves.
11) List at least three reasons to support the idea that sound is a wave.
12) Why are we able to distinguish between two sounds having same loudness?
13) Vibrating mobile phone on wooden table sounds louder than held in hand. Why?
14) If a ringing bicycle bell is held tightly by hand, it shops producing sound. Why?
15) What is difference between loudness and intensity of sound? Derive the relationship between the two.
16) During a match in stadium, you see a batsman striking the ball but why we hear stroke sound slightly later?
17) How much intensity level increases when intensity of louder sound is double the intensity of faintest audible sound?
18) If a pitch of sound is increased then what is its effect on: frequency, speed, intensity, loudness, wavelength.
19) What are the units of loudness? Why do we use logarithmic scale to describe range of the sound intensities we hear?
20) Why is the intensity of an echo less than that of original sound?
21) What is meant by zero bel?
22) Describe the effect of change in amplitude on loudness and change in frequency on pitch of sound?
23) What is echo? What should be minimum distance to hear distinct echo?
24) What is audible frequency range for human ear? Does this range vary with the age of people? Explain.
25) Differentiate between noise and music.
26) What is noise pollution? Write its hazards to human health.
27) How can we reduce noise pollution?
28) How do curtains help to reduce loudness of sound?
29) What steps you would take to stop echoing in a large room?
30) Describe the importance of acoustics protection.
31) Differentiate between ultrasound and infrasound.
32) What are uses of ultrasound in medicine.
33) What is SONAR? Write its advantages.
34) You can listen to your friend round a corner, but you cannot see him. Why?
35) Why must the volume of a stereo in a room with wall-to-wall carpet be tuned higher than in a room with wooden floor?
36) Two people are listening to same music at the same distance. They disagree on its loudness. Why?
37) Two students are talking in the corridor of your school, you can hear them in your class room but cannot see them? Why this happens?
38) Will two separate 50 dB sounds together constitute a 100 dB sound? Explain.
39) If the speed of sound is dependent on frequency, would music from marching band be enjoyed?
40) Why is it so quiet after a snowfall?

“Important Long Questions”

A. Define and explain different characteristics of sound.
B. Define intensity and intensity level of sound. Derive the formula for its decibel scale.

Problems: All examples and exercise problems of National Book Foundation and Punjab TextBook Board