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Sound - Quiz

Multiple Choice Questions: Choose the most appropriate answer.

Q1. Sound can travel through

a. Solids only b. liquids only c. gases only d. All of these.

Q2. An object vibrates with a frequency of 15 hertz. Which of the following is true?

a. It produces sound which we can hear b. It does not produce sound

c. It produces sound which we cannot hear d. It produces sound which we can hear if we strain our ears.

Q3. In which medium does sound travel fastest?

a. Air b. water c. steel d. vacuum

Q4. Sound of frequency 320 Hz is of lower pitch than sound of frequency.

a. 10 Hz b. 180 Hz c. 256 Hz d. 512 Hz

Q5. A list of mediums is given below.

a. Wood b. air c. water d. vacuum

Q6. Which of the following statements are correct?

i. Sound is produced by vibrations
ii. Sound requires a medium for propagation
iii. Light and sound both require a medium for propagation
iv. Sound travels slower than light.
v. 1 & 2 only
vi. 1, 2 & 3 only
vii. 2, 3 & 4 only
viii. 1, 3 & 4 only

Q7. In order to reduce the loudness of a sound we have to

i. Decrease its frequency of vibration of the sound.
ii. Increase its frequency of vibration of the sound.
iii. Decrease its amplitude of vibration of the sound.
iv. Increase its amplitude of vibration of the sound.

Q8. Pitch of sound is determined by its

i. Frequency ii. Speed iii. Amplitude iv. Loudness

Very Short Answer.

Q1. What does loudness of sound depend on?

Q2. In general, which sound has greater frequency - a bird singing or a man singing?

Q3. What travels faster - light or sound?

Q4. Ram saw a cracker burst at night at a distance from his house. He heard the sound of the cracker a little later after seeing the cracker burst. Give reason for the delay in hearing the sound.

Q5. A simple pendulum makes 10 oscillations in 20 seconds. What is the time period and frequency of its oscillation?

Q6. We have learnt that vibrations is necessary for producing sound, Explain why the sound produced by every vibrating body cannot be heard by us?

Q7. Suppose a stick is struck against a frying pan in vacuum. Will the frying pan vibrate? Will we be able to hear the sound? Explain.

Q8. Two astronauts are floating close to each other in space. Can they talk to each other without using any special device? Give reasons.

Long Answer Question.

Q1. We have a stringed musical instrument. The string is plucked in the middle first with a force of greater magnitude and then with a force of smaller magnitude. In which case would the instrument produce a louder sound?

Q2. The townhall building is situated close to Ram's house. There is a clock on the top of the townhall building which rings the bell every hour. Ram has noticed that the sound of the clock appears to be much clearer at night. Explain.

Q3. An explosion occurs on moon. Will it be

(a) Seen
(b) Heard on earth instantly or after some time?

Q4. In a game of hide and seek, how can the blindfolded person guess which player is closest to him?

Answer

Multiple Choice Questions: Choose the most appropriate answer.

Q1. D. All of these

Q2. C. It produces sound which we cannot hear.

Q3. C. Steel

Q4. d. 512 Hz

Q5. (b) Sound requires any medium to travel but in vacuum there is no medium, so sound cannot travel through them.

Q6. (d) Because light can travel in vacuum also but it is only sound which requires medium to travel.

Q7. (c)Since, loudness depends upon amplitude, so it can be increased by increasing amplitude and it can be decreased by decreasing amplitude.

Q8. (a) Pitch or shrillness is determined by the frequency of sound.

Very Short Answer.

Q1. Loudness of sound depends on the amplitude of vibration. Higher the amplitude of vibration, louder is the sound produced.

Q2. The sound of a singing bird has higher frequency than that of a singing man due to higher pitch of the bird's song.

Q3. Light travels faster than sound.

Q4. The light travels faster than sound. So, the light from the cracker reaches faster than that of sound of the cracker.
Speed of light in air = 3 x 108 m/s
Speed of sound in air = 330 m/s

Q5. Given, number of oscillations = 10
Time taken = 20 s

As, we know that the number of oscillations per second is frequency.

$$\therefore \quad \text{Frequency} = \frac{\text{Number of oscillations}}{\text{Time taken}} = \frac{10}{20} = 0.5 \text{ Hz}$$

$$\therefore \quad \text{Time period} = \frac{1}{\text{Frequency}} = \frac{1}{0.5} = 2\text{s}$$

Q6. Since, range of frequency for every vibrating body is different. But we can hear the vibrations which lies between the range of frequencies from 20 Hz to 20000 Hz, so sound of every vibrating body cannot be heard by us.

Q7. Yes, the frying pan will vibrate.
Since, it is being hit by the stick but vibrations need a medium to travel and there is no medium in vacuum, so we cannot hear the vibrations produced.

Q8. No, they cannot talk to each other without using any special device because there is no medium in space and sound needs medium to travel.

Long Answer Questions.

Q1. It will create more loud sound in case of string stretched with a greater force because amplitude is greater in this case and loudness depends on the amplitude. Greater will be the loudness, greater will be the amplitude.

Q2. We know that speed, pitch, loudness all are initiated with a vibration. During the day, there is a number of vibrations around us. So, the sound coming from the clock gets disturbed and amplitude of vibrations becomes small.
But during the night, there are not such multiple vibrations in the environment. So, sound is more clear. Further,-"the dew factor at night increases the speed of sound as moisture level increases.

Q3.

(a) It will be seen instantly on earth, as light travels at a great speed of 300000000 m/s.
(b) It will not be heard on earth, as sound needs a medium to travel and there is no medium between the moon and earth.

Q4. In a game of hide and seek, the blindfolded person guesses the player closest to him by following the sound generated by the movement and speech of the closest player.