



PHYSICS

NCERT - NCERT PHYSICS(BENGALI ENGLISH)

SOUND

Example

1. Find the time period of the wave whose frequency is 500Hz?



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2. In a certain gas, a source produces 40,000 compression and 40,000 rarefaction pulses in 1 sec. When the second compression pulse is produced, the first is 1cm away from the source. Calculate the wave speed.



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3. An echo is heard after 0.8s, when a boy fires a cracker, 132m away from a tall building. Calculate the speed of sound?



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4. A research team sends a sonar signal to confirm the depth of a sea. They heard an echo after 6s. Find the depth of the sea if speed of sound in water is 1500 m/s.



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Think And Discuss

1. Do compressions and rarefactions in sound wave travel in same directions or in opposite directions ? Explain.



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2. Does the frequency of sound waves depend on the medium in which it travels? How?



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3. The frequency of source of sound is 10Hz.
How many times does it vibrate in one minute?



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4. Gently strike a hanging bell (temple bell) and try to listen to the sound produced by it with a stethoscope keeping it both at bottom portion and top portion of the bell. Is the

pitch and loudness of the sound same at the two portions ? Why ?



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5. During a thunderstorm if you notice a 3 second delay between the flash of lightning and sound of thunder. What is the approximate distance of thunderstorm from you.



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6. Two girls are playing on identical stringed instruments. The strings of the both instruments are adjusted to give notes of same pitch. Will the quality of two notes be same? Justify your answer.



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7. What change would you expect in the characteristic of a musical sound when we increase its frequency at one instance and amplitude at another instance?



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8. What could be the reason for better reflection of sound by rough surfaces than polished surfaces?



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9. Why is an echo weaker than the original sound ?



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10. In a closed box if you say hello, the sound heard will be Helloooooo..... What does it mean?



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11. What is the advantage of having conical openings in Horns, megaphones etc. ?



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12. Why do we put cushions on the chairs, carpet on the floor, straw materials on the walls in cinema halls?



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Let Us Improve Our Learning Reflections On Concepts

1. Explain the following terms

a) amplitude (b) wavelength (c) frequency

(AS_1)



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2. Write the relation between wavelength, frequency and speed of sound (AS_1)



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3. Which has larger frequency – infrasonic sound or ultrasonic sound? (AS_2)



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4. What do you understand by a sound wave?

(AS_1)



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5. Why is soft furnishing avoided in concert halls?
halls? (AS_7)



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6. Define the wavelength of a sound wave. How is it related to the frequency and the wave speed? (AS_1)



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Let Us Improve Our Learning Application Of Concepts

1. Does the sound follow same laws of reflection as light does? (AS_1)



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2. Two sources A and B vibrate with the same amplitude. They produce sounds of frequencies 1kHz and 30kHz respectively. Which of the two waves will have larger power? (AS_1)



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3. You might have observed that sometimes your pet dog starts barking though no one is

seen near in its surroundings or no disturbance heard nearby. Does this observation raise any doubts in your mind about the peculiar behavior of dog after your understanding about 'range of hearing the sound'. If yes, write them. (AS_2)



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4. With the help of a diagram describe how compression and rarefaction pulses are produced in air near a source of sound. (AS_5)



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5. How are multiple reflections of sound helpful to doctors and engineers? (AS_7)



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Let Us Improve Our Learning Higher Order Thinking Questions

1. How do you appreciate efforts of a musician to produce melodious sound using a musical

instrument by simultaneously controlling frequency and amplitude of the sounds produced by it. (AS_6)



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2. How do echoes in a normal room affect the quality of the sounds that we hear? (AS_7)



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Let Us Improve Our Learning Multiple Choice Questions

1. When can you say that the sound is propagating through a medium ?

A. If the medium is travelling

B. The particles of a medium are travelling

C. When the source of sound is travelling

D. When the disturbance is travelling.

Answer:



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2. The unit for the number of waves produced in a second are

A. hertz

B. joule

C. meter

D. pascal

Answer:



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3. The sounds of frequency less than 20 Hz are known as

A. Ultra sounds

B. Soft sounds

C. Louder sounds

D. Infrasonics

Answer:



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4. The sound limit between the frequency of 20Hz – 20000Hz is called as

- A. Audible range
- B. Ultra sound range
- C. Low sound range
- D. Sonic boom

Answer:



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5. The characteristic feature of sound which conveys the sensation of sound to our brain is

A. Pitch

B. Loudness

C. Quality

D. amplitude

Answer:



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Let Us Improve Our Learning Suggested Projects

1. We know that the sound is a form of energy. So, the large amount of energy produced due to the sound pollution in cosmopolitan cities can be used to our day to day needs of energy. It also helps us to protect biodiversity in urban areas". Do you agree with this statement? Collect information on this and write a report.



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