



PHYSICS

BOOKS - VGS BRILLIANT PHYSICS (TELUGU ENGLISH)

SOUND

Conceptual Understanding

1. Explain how echoes are used by bats to judge the distance of an obstacle in front of

them.



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2. Explain the working process and applications of SONAR.



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Asking Questions And Making Hypothesis

1. You might have observed that sometimes your pet dog starts barking though no one is seen in its surroundings or no disturbance heard nearby. Does this observation raise any doubts in your mind about the peculiar behaviour of dog after your understanding about 'range' of hearing the sound'. If yes, write them.



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



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Try These

1. What do you understand by a sound wave ?



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2. Find out the names of animals which communicate using infrasonic or ultrasonic sound and prepare a scrap book.



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3. How do you appreciate efforts of a must to produce melodious sound using a musical instrument by simultaneously controlling frequency and amplitude of the sounds produced by it.



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4. How are multiple reflections of sound helpful to doctors and engineers?



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5. How do echoes in a normal room affect the quality of the sounds that we hear ?



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6. A man is lying on the floor of a large, empty hemispherical hall, in such a way that his head is at the centre of the hall. He shouts "Hello" and hears the echo of his voice after 0.2s. What is the radius of the hall ?



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7. " We know that 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 ? Explain.



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Activities

1. How can you say that the sound is a form of energy?



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2. Prove that the sound is produced from a vibrating source.



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3. How do you demonstrate the formation of compression and rarefactions in a slinky?



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4. How do you demonstrate the hello crests and troughs in a slinky?



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5. Describe an activity to listen the reflection sound.



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Think Discuss

1. Do compression 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?



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



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4. Gently strike a hanging 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 two identical stringed instruments. The strings of the both instruments are adjusted to give notes 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 one instance and amplitude in 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 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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13. What is the benefit of using ultrasound over light waves in the above applications?



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1. How does sound reach our ears from the source of its production?



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2. Does it travel by itself or is there any force bringing it to our ears?



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3. What is sound ? Is a force or an energy?



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4. Why don't we hear sounds when our ears are closed?



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5. Why is the light ray dancing, after sound is made in the tin?



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6. What do you infer from this?



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7. Can we say that sound is a form of mechanical energy?



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8. Do you hear any sound?



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9. Do you see any vibrations in the tuning fork?



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10. What do you conclude form the above activity?



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11. Can you produce sound without vibration in the body?



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12. Give some examples of vibrating bodies which produce sound?



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13. What part of our body vibrates when we speak?



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14. Do all vibrating bodies necessarily produce sound?



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15. If sound travels in the form of a wave then what is the pattern?



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16. What do you say about sound waves in air by the above activity?



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17. Are they longitudinal or transverse?



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18. Does sound get reflected at the surface of a solid?



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19. What happens if you lift your tube slightly above the table?



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20. Are able to listen to the sound ? If not why?



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21. Do hard surfaces reflect sound better than soft ones?



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[Worked Out Examples](#)

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



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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 1 cm away from the source. Calculate the wave speed?



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