



PHYSICS

BOOKS - PSEB

SOUND

Exercise

1. What is sound and how is it produced ?



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2. Describe with the help of diagram, how compressions and rarefactions are produced in air near a source of sound ?



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3. Cite an experiment to show that sound need a material medium for its propagation?



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4. Why is sound wave called longitudinal wave?



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5. Which characteristic of the sound help you to identify your friend by this voice while sitting with others in a dark room.



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6. Flash and thunder are produced simultaneously. But thunder is heard a few seconds after the flash is seen. Why?



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7. A person has a hearing range from 20 Hz to 20 KHz. What is the typical wavelength of sound waves in air corresponding to these frequencies? Take the speed of sound in air as 344ms^{-1} .





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8. Two children are at opposite ends of an aluminium rod. One strikes the end of the rod with a stone. Find the ratio of times taken by the sound wave in air and in aluminium to reach the second child.



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9. The frequency of source of sound is 100 Hz. How many times does it vibrate in a minute ?



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10. Does sound follow the same laws of reflection as light does ? Explain.



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11. When a sound is reflected from a distant object, an echo is produced. Let the distance between the reflecting surface and the source

of sound production remains the same. Do you hear echo sound on a hotter day ?



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12. Give two practical applications of reflection of sound waves.



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13. A stone is dropped from the top of a tower 500 m high into a pond of water at the base of

the tower. When is the splash heard at the top ? Given, $g = 10ms^{-2}$ and speed of sound = $340ms^{-1}$.



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14. A sound wave travels at a speed of $339ms^{-1}$. If its wavelength is 1.5 cm, what is the frequency of the wave ? Will it be audible ?



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15. What is reverberation ? How can it be reduced ?



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16. Cite an experiment to show that sound need a material medium for its propagation?



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17. Explain how bats use ultrasounds to catch a prey ?



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18. How is ultrasound used for cleaning ?



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19. Explain the working and applications of SONAR.



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20. A sonar device on a submarine sends out a signal and receives an echo 5s later. Calculate the speed of sound in water if the distance of the object from submarine is 3,625 m.



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21. Explain how defects in a metal block can be detected using ultrasound ?





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22. Explain how the human ear works.



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