PHYSICS

BOOKS - CAMBRIDGE PHYSICS (KANNADA ENGLISH)

SOUND

Question Hour

1. How does the sound produced by a vibrating object in a medium reach your ear ?

A.

B.

C.

D.

Answer:

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2. Explain how sound is produced by your school bell.

A.

B.

C.

D.

Answer:

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3. Why are sound wave called mechanical wave ?

A.

B.

C.

D.

Answer:

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4. Suppose you and your fried are on the moon. Will you be able to hear any sound produced by your friends ?

A.

B.

C.

D.

Answer:

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5. Which wave property determines

(a) loudness

(b) pitch ?

A.

B.

C.

D.

Answer:

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6. Guess which sound has a higher pitch : guitar or car horn ?

A.

B.

C.

D.

Answer:

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7. What are wave length, frequency, time period and amplification of a sound wave ?

A.

B.

C.

D.

Answer:

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8. How are the wave length and freque ncy of a sound wave related to its speed ?

A.

B.

C.

D.

Answer:

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9. Calculate the wavelength of a sound wave whose frequency is 220Hz and speed is 440 m/s in a given medium.

A.

B.

C.

D.

Answer:

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10. A person is listening to a tone of 500 Hz sitting at a distance of 450 m from the so

A.

B.

C.

D.

Answer:

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11. Distinguish between loudness and intensity of sound.

A.

B.

C.

D.

Answer:

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12. In which of the three media, air, water iron, does sound travel the fastest at a particular temperature ?

A.

B.

C.

D.

Answer:

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13. An echo returned in 3 s what is the distance of the reflecting surface from the source, given that the speed of the sound is 342m/s

A.

B.

C.

D.

Answer:

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14. Why are the cellings of concert halls curved ?

A.

B.

C.

D.

Answer:

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15. What is the audible range of the average human ear ?

A.

B.

C.

D.

Answer:

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16. What is the range of frequencies associated with

(a) Infrasound

(b) Ultrasound

A.

B.

C.

D.

Answer:

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17. A submarine emits a sonar pulse, which returns from an underwater cliff in 1.02s. If the speed of sound in salt water is 1531 m/s , how far away is the cliff ?

A.

B.

C.

D.

Answer:

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Exercise

1. What is sound and how is it produced ?

A.

B.

C.

D.

Answer:

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2. Describe with the help of a diagram, how compression and rarefractions are produced in air near a source of sound.

A.

B.

C.

D.

Answer:

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3. City an experiment to show that sound needs a material medium for its propagation.

A.

B.

C.

D.

Answer:

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4. Why is sound wave called a longitudinal wave ?

A.

B.

C.

D.

Answer:

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5. Which characteristics of the sound helps you to identify your friend by his voice while sitting with other in a dark room ?

A.

B.

C.

D.

Answer:

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

A.

B.

C.

D.

Answer:

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7. A person has a hearing range from 20Hz to 20Khz. What are the typical wave lengths of sound wave in air corresponding to these two frequen cies ? Take the speed of sound in air of $344ms^{-1}$

A.

B.

C.

D.

Answer:

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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 takes by the sound wave in air and in aluminum to reach the second child.

A.

B.

C.

D.

Answer:

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

A.

B.

C.

D.

Answer:

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

A.

B.

C.

D.

Answer:

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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 ?

A.

B.

C.

D.

Answer:

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

A.

B.

C.

D.

Answer:

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13. A stone is dropped from the top of a tower 500m height 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 $= 340m/s$.

A.

B.

C.

D.

Answer:

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

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

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16. What is loudness of sound ? What factors does it depends on ?

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17. Explain how bats use ultrasound to catch a prey.

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18. How is ultrasound used for cleaning ?

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19. Explain the working and application of a sonar.

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20. A Sonar device on a submarine sends out a signal and receive an eeho 5s later.

Calculate the speed of sound in water if the distance of the object from the submarine is 3625m.

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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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Additional Questions I Choose The Correct Answer

1. A wave is slinky travelled to and fro in 5 see the length of the slinky is 5m. The velocity of wave is_____.

A. 10m/s

B. 5m/s

C. 2m/s

D. 25m/s

Answer: C

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2. Loud sound can travel a larger distance, due to

A. Higher amplitude

B. Higher energy

C. high frequency

D. high speed

Answer: C

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3. We can distinguish between sound having same pitch and loudness this characteristic os sound is

A. 1

B. Note

C. Pitch

D. timber

Answer: B

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4. Speed of sound depends on

A. Temperature of medium

B. Pressure of medium

C. Temperature of source producing sound

D. Temperature of pressure of medium

Answer: D

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5. Speed (s), wave length (λ) and frequency (υ) of sound are related as

A. $S = u \times v$

B. $v = s \times u$

C. $u = s \times v$

D. $u = s / v$

Answer: C

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6. To hear a distinct echo the time interval between the original sound and reflected sound must be

A. (0.2 s)

B. 1 s

C. 2 s

D. 0.1 s

Answer: D

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7. Reveberation of sound is used in .

A. Stethoscope

B. Trumpets

C. megaphone

D. all of these

Answer: D

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8. Children under the age of 5 can hear upto.

A. 20kHz

B. 20 Hz

C. 25 kHz

D. 25 Hz

Answer: B

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9. Dolphins bats and tortoise uses

A. Ultrasound

B. Transformed

C. Both (a) & (b)

D. None of these

Answer: A

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10. The part of human ear that convert sound vibrations into electrical Signal are

A. Tympanic membrane

B. Stirrup

C. Hammer

D. Cochlea

Answer: D

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Additional Questions Ii Fill In The Blanks

1. The minimum distance require to hear distinct echo is _____.

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2. The audiable range of frequency of human beings are____.

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3. Acronym of SONAR is_____.

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4. The SI unit of frequency is_____ .

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5. The relation to find speed, frequency and wave length is_____.

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Additional Questions Iii Match The Following

1.

1) Pinna	a) Convert electrical signals
2) Eardrum	b) Transmits the amplified pressure
3) Middle ear	c) Sent to the brain
4) Cochlea	d) Passes through the auditory canal.
5) Auditory nerve	e) Vibrates

A.

B.

C.

D.

Answer: 1-(d), 2-(e), 3-(b), 4-(a), 5-(c)

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Additional Questions Iv Answer The Following

1. What is the relation between frequency (v) and time period of a sound wave ?

A.

B.

C.

D.

Answer:

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2. Find the frequency of a wave whose time period is 0.002 second

A.

B.

C.

D.

Answer:

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3. What is SONAR ?

A.

B.

C.

D.

Answer:

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4. Differentiate between longitudinal wave and transverse wave.

A.

B.

C.

D.

Answer:

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5. What is crest and trough?

A.

B.

C.

D.

Answer:

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6. What is velocity os sound? Why does sound travel faster is summer season than in winter.

A.

B.

C.

D.

Answer:

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7. Draw a graphical represntation of the wave shape for (a) low pitched sound (b) a high pitched sound.

A.

B.

C.

D.

Answer:

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8. Define amplitude, time period and frequency of sound wave.

A.

B.

C.

D.

Answer:

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9. A sound wave causes the density of air at a place to oscillate 1200 times in 2 minutes. Find the time period and frequency of the wave.

A.

B.

C.

D.

Answer:

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10. Give 2 uses of ultrasound.

A.

B.

C.

D.

Answer:

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