5. Sound

Very Short Answer Type Questions-Pg-185

1. Question

Can sound travel through (a) iron, and (b) water?

Answer

Yes, sound can travel through both (a) iron, and (b) water.

2. Question

Can sound travel through vacuum?

Answer

No, sound cannot travel through vacuum.

3. Question

Name the type of waves which are used by astronauts to communicate with one another on moon (or in outer spece).

Answer

The type of waves which are used by astronauts to communicate with one another on moon (or in outer spece) are radio waves.

4. Question

Name one solid, one liquid and one gas through which sound can travel.

Answer

Iron, water, and air are one solid, one liquid and one gas through which sound can travel.

5. Question

Which of the following cannot transmit sound?

Water, Vacuum, Aluminium, Oxygen gas

Answer

Vacuum cannot transmit sound.

6. Question

Name the physical quantity whose SI unit is ‘hertz’.

Answer

The physical quantity whose SI unit is ‘hertz’ is frequency.

7. Question

What is the SI unit of frequency?

Answer

The SI unit of frequency is hertz.

8. Question

What type of wave is represented :

(a) by density-distance graph?

(b) by displacement-distance graph?

Answer

(a) Longitudinal wave is represented by density-distance graph.

(b) Transverse wave is represented by displacement-distance graph.

9. Question

Is the speed of sound more in water or in steel?

Answer

The speed of sound is more in steel.

10. Question

In which medium sound travels faster: air or iron?

Answer

Sound travel faster in iron.

11. Question

In which medium sound travels fastest: air, water or steel?

Answer

Among the given three sound travels faster in steel.

12. Question

Out of solids, liquids and gases :

(a) in which medium sound travels slowest?

(b) in which medium sound travels fastest?

Answer

(a) In gas sound travels slowest.

(b) In solids sound travels fastest.

13. Question

Which of the following is the speed of sound in copper and which in aluminium?

(a) 5100 m/s (b) 1500 m/s

(c) 3750 m/s

Answer

The speed of sound in copper is 3750 m/s where as the speed of sound in aluminium is 5100 m/s.

14. Question

If you want to hear a train approaching from far away, why is it more convenient to put the ear to the track?

Answer

If you want to hear a train approaching from far away, it is more convenient to put the ear to the track because sound travels faster in solids.

15. Question

What is the speed of sound :

(a) in air?

(b) in water?

(c) in iron?

Answer

(a) The speed of sound in air 343 m/s.

(b) The speed of sound in water is 1,484 m/s.

(c) The speed of sound in iron is 5,130 m/s.

16. Question

What name is given to those aircrafts which fly at speeds greater than the speed of sound?

Answer

Supersonic aircrafts is the name given to those aircraft which fly at speed greater then the speed of sound.

17. Question

A jet aircraft flies at a speed of 410 m/s. What is this speed known as?

Answer

A jet aircraft flies at a speed of 410 m/s. Its speed is known as supersonic.

18. Question

What is meantby supersonic speed?

Answer

When any object have move more speed then sound then it is kown as supersonic speed.

19. Question

State one observation from everyday life which shows that sound travels much more slow than light.

Answer

During rain we see the lightning first and then we hear the sound followed by it, is a live everyday example which shows that light travels faster then sound.

20. Question

Name the two types of waves which can be generated in a long flexible spring (or slinky).

Answer

Transverse waves and Longitudinal waves are the two types of waves which can be generated in a long flexible spring (or slinky).

21. Question

A stone is dropped on the surface of water in a pond. Name the type of waves produced.

Answer

Transverse (water) wave is prodced when a stone is droped on the surface of water in pond.

22. Question

Name the type of wave produced when a tuning fork is struck in air.

Answer

Longitudinal wave is produced when a tuning fork is struck in air.

23. Question

What is the general name of the waves consisting of :

(a) compressions and rarefactions?

(b) crests and troughs?

Answer

(a) The general name of the waves consisting of compressions and rarefactions is Longitudinal wave.

(b) The general name of the waves consisting of crests and troughs is Trnsverse wave.

24. Question

State the general name of the waves on which the particles of the medium vibrate:

(i) in the same direction as wave.

(ii) at right angles to the direction of wave.

Answer

(i) The general name of the waves on which the particles of the medium vibrate in the same direction as wave is longitudinal wave.

(ii) The general name of the waves on which the particles of the medium vibrate at right angles to the direction of wave is transverse wave.

25. Question

What type of waves are illustrated by the movement of a rope whose one end is fixed to a pole and the other end is moved up and down?

Answer

Transverse waves are illustrated by the movement of a rope whose one end is fixed to a pole and the other end is moved up and down.

26. Question

What should an object do to produce sound?

Answer

An object should viberate to produce sound.

27. Question

What is the name of the strings which vibrate in our voice box when we talk?

Answer

the name of the strings which vibrate in our voice box when we talk is vocal cords.

28. Question

Name the device which is used to produce sound in laboratory experiments.

Answer

The device which is used to produce sound in laboratory experiments tuning fork.

29. Question

What is the nature of sound waves in air?

Answer

The nature of sound waves in air is to propogate.

30. Question

What conclusion can be obtained from the observation that when the prongs of a sound making tuning fork touch the surface of water in a beaker, the water gets splashed?

Answer

The conclusion which can be obtained from the observation that when the prongs of a sound making tuning fork touch the surface of water in a beaker, the water gets splashed is that the prongs of tuning fork vibrates.

31. Question

State whether the following statement is true or false:

Sound produced by a vibrating body travels to our ears by the actual movement of air.

Answer

False, Sound produced by a vibrating body travels to our ears by the actual movement of particles propogetion.

32. Question

Which of the following travels slowest in air and which one fastest?

Supersonic aircraft, Light, Sound

Answer

Sound travels slowest in the air but on the other hand light travels faster in the air.

33. Question

Which term is used to denote a speed greater than the speed of sound?

Answer

Supersonic term is used to denote a speed greater than the speed of sound.

34. Question

In which medium sound travels faster: air or hydrogen?

Answer

Sound travels faster in air.

35. Question

A tuning fork has a number 256 marked on it. What does this number signify?

Answer

A tuning fork has a number 256 marked on it. This number signify the frequency of the tunning fork.

36. Question

What is the time-period of a tuninh fork whose frequency is 200 Hz?

Answer

The time-period of a tuninh fork whose frequency is 200 Hz is 5×10^{-3} s.

37. Question

Calculate the frequency of a wave whose time-period is 0.02 s.

Answer

The frequency of a wave whose time-period is 0.02 s is 50 Hz.

38. Question

What will be the change in the wavelength of a sound wave in air if its frequency is doubled?

Answer

Wavelength is halved when ther is change in the wavelength of a sound wave in air if its frequency is doubled.

39. Question

If 20 waves are produced per second, what is the frequency in hertz?

Answer

If 20 waves are produced per second then the frequency is 20 Hz.

40. Question

Fill in the following blanks with suitable words

(a) Sound is caused by ……..

(b) A sound wave consists of places of higher pressure called ….. and places of …….. pressure called …….

(c) Wave speed in metres per second equals frequency in …….. Multiplied by …….. in ……

(d) Sound cannot travel through …….

(e) The speed of sound in a solid is ……. than the speed of sound in air.

(f) When the frequency of the sound is increased, the wavelength …….

Answer

(a) Sound is caused by vibrations.

(b) A sound wave consists of places of higher pressure called compression and places of lower pressure called rarefraction

(c) Wave speed in metres per second equals frequency in hertz Multiplied by wavelength in meters.

(d) Sound cannot travel through vacuum.

(e) The speed of sound in a solid is greater than the speed of sound in air.

(f) When the frequency of the sound is increased, the wavelength decreases.

Short Answer Type Questions-Pg-186

41. Question

What is vaccum? Explain why, sound cannot travel through vacuum?

Answer

Vacuum is a space of matter which is empety of matter.

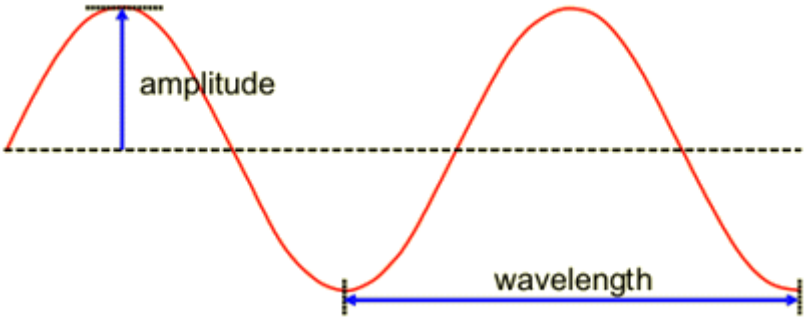
Sound is a mechanical energy, and this requires a material medium for the transfer of its energy. Since there is no material (matter) in a vacuum, sound energy cannot travel through it.

42. Question

Explain the term ‘amplitude’ of a wave. Draw the diagram of a wave and mark its amplitude on it.

Answer

Amplitude is the vertical distance between a peak or a valley and the equilibrium point of a wave.



43 A. Question

Distinguish between longitudinal and transverse waves.

Answer

Longitudinal waves :- The general name of the waves on which the particles of the medium vibrate in the same direction as wave is longitudinal wave. Where as

Transverse waves:- The general name of the waves on which the particles of the medium vibrate at the right angle is known as transverse wave.

43 B. Question

Are sound waves longitudinal or transverse?

Answer

Sound waves are longitudinal in nature.

44. Question

A cricket ball is seen to hit the bat first and the sound of hitting is heard a little later. Why?

Answer

This happens because the speed of light is faster in air then that of the speed of sound.

45. Question

Explain why, the flash of lightning reaches us first and the sound of thunder is heard a little later.

Answer

The flash of lightning reaches us first and the sound of thunder is heard a little later, this happens because the speed of light is faster in air then that of the speed of sound.

46. Question

Explain why, the flash of a gun shot reaches us before the sound of the gun shot.

Answer

The flash of a gun shot reaches us before the sound of the gun shot because the speed of light is faster in air then that of the speed of sound.

47. Question

Which of the following terms apply to sound waves in air and which to water waves?

Transverse, Rarefaction, Trough, Crest, Compression, Longitudinal

Answer

The term apply to sound waves in air are; Longitudinal, Compression, Rarefaction.

The term apply to water waves are; Transverse, Crest, Trough.

48 A. Question

Name four ways in which sound can be produced.

Answer

The four ways are tapping, clapping, throwing, and beating.

48 B. Question

Calculate the speed of a sound wave whose frequency is 2 kHz and wavelength 65 cm.

Answer

the speed of a sound wave whose frequency is 2 kHz and wavelength 65 cm is 1300 m/s.

49. Question

If a ringing bicycle bell is held tightly by hand, it stops producing sound. Why?

Answer

Because the vibrations it produced is absorbed by our hand and not allowed to propagate in the air.

50. Question

Which object is vibrating when the following sounds are produced?

(i) The sound of a *sitar*

(ii) The sound of *table*

(iii) The sound of a tuning fork

(iv) The buzzing of a bee or mosquito

(v) The sound of a flute

Answer

(i) Strings of sitar or veena vibrate to produce sound.

(ii) The skin of the tabla vibrate to produce sound.

(iii) Prongs of the turning fork vibrate to produce sound.

(iv) Wings of the mosquito or a bee vibrate to produce sound.

(v) Air column inside the flute vibrates to produce sound.

51. Question

Give reason for the following :

In most of the cases, we cannot see the vibrations of a sound producing object with our eyes.

Answer

The lowest frequency that anyone can hear is 20 Hz. Hence time period is = 1/20 = 0.05 Sec. Due to Persistence of vision in our eyes we can not see the vibration of less than 0.1 sec. Therefore we are not able to see the vibrations of any sound producing objects.

52. Question

Describe a simple experiment to show that the prongs of a sound producing tuning fork are vibrating.

Answer

Suspend a tennis ball on a rigid support by means of a string. Touch the Vibrating turning fork. You will be able to see that the tennis ball is set into motion by the vibrations.

53. Question

When we open a gas tap for a few seconds, the sound of escaping gas is heard first but the smell of gas comes later. Why?

Answer

The speed of Sound is much higher than the speed of gas. So we can hear the sound of escaping gas much before we smell it.

54. Question

A sound signal of 128 vibrations per second has a wavelength of 2.7 m. Calculate the speed with which the wave travels.

Answer

A sound signal of 128 vibrations per second has a wavelength of 2.7 m. The speed with which the wave travels is 345.6 m/s.

55. Question

A wave is moving in air with a velocity of 340 m/s. Calculate the wavelength if its frequency is 512 vibrations/sec.

Answer

A wave is moving in air with a velocity of 340 m/s. 0.66 m is the wavelength if its frequency is 512 vibrations/sec.

56. Question

Define the 'frequency' and 'time-period' of a wave. What is the relation between the two?

Answer

Frequency (f) = Number of Vibrations produced in one second.

Time Period (T) = Time of one variation.

Relation between Time Period and Frequency $\Rightarrow T = 1/f$

57. Question

Explain why, a ringing bell suspended in a vacuum chamber cannot be heard outside.

Answer

As sound is a mechanical wave it cannot travel in vacuum. So, the bell ringing inside a vacuum chamber can not be heard.

58. Question

The frequency of the sound emitted by the lioudspeaker is 1020 Hz. Calculate the wavelength of the sound wave in air in cm where its velocity is 340 m/s.

Answer

Frequency = 1020Hzvelocity = 340m/s i.e. 34000 cm/sWavelength = velocity / frequency = 34000 / 1020 = 100 /3 **= 33.33cm**

59. Question

What is the difference between a compression and a rarefaction in a sound wave? Illustrate your answer with a sketch.

Answer

Compression : Particles of the medium are pushed close to each other. It is a region of high density and pressure.

Rarefaction : Particles of the medium move away It is a region of low density and pressure.

60 A. Question

What is sound? What type of waves are sound waves in air?

Answer

Sound is a form of energy which gives the sensation of hearing waves. Sound waves are longitudinal waves.

60 B. Question

Describe an experiment to show that sound cannot pass through vacuum.

Answer

Take an electric bell and an airtight glass bell jar. The electric bell is suspended inside the airtight bell jar. The bell jar is connected to a vacuum pump. If you press the switch, you will be able to hear the bell. Now start the vacuum pump. Then the air in the jar is pumped out gradually, the sound becomes fainter, although the same current is passing through the bell. After some time when less air is left inside the bell jar you will hear a very- feeble sound. When all air is removed no sound is heard. This shows that sound can not pass through vacuum.

61 A. Question

How is sound produced? Explain with the help of an example.

Answer

Sound is produced by the vibrations of any object These vibrations are transferred to air particles and reach to us. For example - In school bell, when the gong strikes the bell, vibrations are produced in the bell which are transmitted through the air to our ears. These vibration produce sensation of sound in our ears.

61 B. Question

How does sound from a sound producing body travel through air to reach our ears? Illustrate your answer with the help of a labelled diagram.

Answer

When a body vibrates the air in its neighbourhood is alternately compressed and rarefied. The compressed air has higher pressure than surrounding air. It therefore pushes the air particles near it causing compression to move forward. A rarefaction or low pressure is created at the original place. These compressions and rarefaction cause particles m the air to vibrate about their mean position. The energy is carried forward in these vibration. This is how sound travels.

62 A. Question

An electric bell is suspended by thin wires in a glass vessel and set ringing. Describe and explain what happens if the air is gradually pumped out of the glass vessel.

Answer

As the air inside the vacuum tube is pumped out, it becomes fainter. Then all air is pumped out, no sound is heard. This is because air requires a material medium to travel.

62 B. Question

Why cannot a sound heard on the moon? How do astronauts talk to one another on the surface of moon?

Answer

There is no atmosphere in the moon, so sound cannot propagate. Astronauts talk through radio wave.

67 A. Question

When we put our ear to a railway line, we can hear the sound of an approaching train even when the train is far off but its dound cannot be heard through the air. Why?

Answer

Since sound travels faster m solids, we can hear the sound of train by putting our ear on the solid and only later we can hear though air.

67 B. Question

How could you convince a small child that when you speak, it is not necessary for air to travel from your mouth to the ear of a listener?

Answer

Take a slinky end tie one end to the wall and give the other end a push or pull alternately Compressions and rarefactions move towards the wall i.e. wave

moves but the parts of the slinky just vibrates about Its mean position.

In the same way compressions and rarefactions are produced in air and no net movement of air particles is required for sound to travel.

Long Answer Type Questions-Pg-187

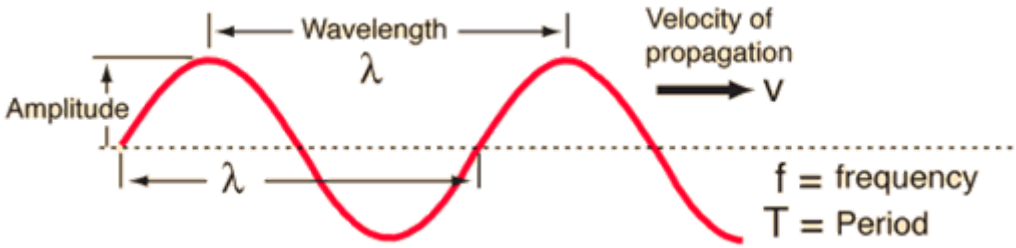
63 A. Question

Define the terms 'frequency', 'wavelength' and 'velocity' of a sound wave. What is the relation between them?

Answer

The distance over which the wave's shape repeats is known as wavelength. The freaquency is defined as the rate of viberation of sound traveling through air , on the other hand the term velocity shows the speed in a given direction and its magnitude.

A single frequency traveling wave will take the form of a sine wave. A snapshot of the wave in space at an instant of time can be used to show the relationship of the wave properties frequency, wavelength and propagation velocity.



The motion relationship "distance = velocity x time" is the key to the basic wave relationship. With the wavelength as distance, this relationship becomes λ = vT. Then using f=1/T gives the standard wave relationship

V= fλ Calculation

This is a general wave relationship which applies to sound and light waves, other electromagnetic waves, and waves in mechanical media.

63 B. Question

A body vibrating with a time-period of $\frac{1}{256}$ s produces a sound wave which travels in air with a velocity of 350 m/s. Calculate the wavelength.

Answer

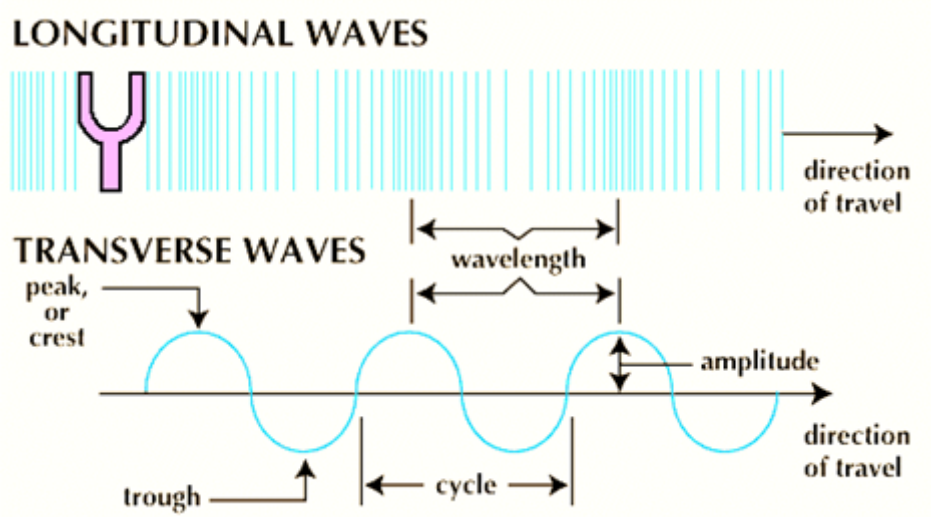
A body vibrating with a time-period of $\frac{1}{256}$ s produces a sound wave which travels in air with a velocity of 350 m/s will have the wave length of 1.36 m.

64 A. Question

What are longitudinal waves and transverse waves? Explain with the help of labelled diagrams.

Answer

Those waves which moves in parallel direction with the direction of waves are known as Longitudinal waves. Where as when the motion of the wave is perpendicular to the direction of waves is called Transverse wave.



64 B. Question

Give two examples each of longitudinal waves and transverse waves.

Answer

The examples of transverse waves are:- viberation in string and ripples in water. Where as the examples of longitudinal wave are:- tsunami waves and sound waves.

65 A. Question

Explain the terms ‘compressions’ and ‘rarefactions’ of wave. What type of waves consist of compressions and rarefactions?

Answer

A compression is a part of longitudinal wave where the particles are closest together. Where as the rarefraction is that part of the longitudinal wave where the particals are furthest apart. Longitudinal waves consists of compression and rarefraction.

65 B. Question

A worker lives at a distance of 1.32 km from the factory. If the speed of sound in air be 330 m/s, how much time will the sound of factory siren take to reach the worker?

Answer

The time taken by the sound of factory siren take 4s to reach the worker when a worker lives at a distance of 1.32 km from the factory. If the speed of sound in air be 330 m/s.

66 A. Question

Explain the terms ‘crests’ and ‘troughs’ of a wave? What type of waves consist of crests and troughs?

Answer

The crest appears as the highest point, while the trough is the lowest, forming a dip or valley in the wave's motion. The crest, also called the peak, forms the maximum height of every wave, including water waves, radio waves and electrical waves. The distance and height between the trough and crest varies depending on the type of wave and local conditions, such as wind speed and direction. Transverse waves consists of creast and thoughs.

66 B. Question

The flash of a gun is seen by a man 3 seconds before the sound is heard. Calculate the distance of the gun from the man (Speed of sound in air is 332 m/s).

Answer

Since the speed of lght is $3*10^8$, for all the purpose, the flash is seen at the same time that the gun is fired.

So we know that formula of speed= distance/time;

So, distance= speed*time (i)

Sped of sound in air is 332 m/s (given) and time= 3s.

Subustituing the value in equation (i) we get

(D)= 332 m/s*3s

We get D= 996 m.

Multiple Choice Questions (MCQs)-Pg-187

68. Question

Which of the following statement best describes frequency?

A. the maximum disturbance caused by a wave

B. the number of complete vibrations per second

C. the distance between one crest of a wave and the next one

D. the distance travelled by a wave per second

Answer

The number of comlete vibrations per second.

69. Question

Which of the following vibrates when a musical note is produced by the cymbals in an orchestra?

A. stretched strings

B. stretched membranes

C. metal plates

D. air columns

Answer

Metal plates vibrates when a musical note is produced by the cymbals in an orchestra.

70. Question

If the speed of a wave is 340 m/s and its frequency is 1700 Hz, then l for this wave in cm will be:

A. 2 B. 0.2

C. 20 D. 200

Answer

If the speed of a wave is 340 m/s and its frequency is 1700 Hz, then l for this wave in cm will be 20.

71. Question

A musical instrument is producing a continuous note. This note cannot be heard by a person having a normal hearing range. This note must then be passing through:

A. water B. wax

C. vacuum D. empty vessel

Answer

A musical instrument is producing a continuous note. This note cannot be heard by a person having a normal hearing range. This note must then be passing through vacuum.

72. Question

Which one of the following does not consist of transverse waves?

A. light emitted by a CFL

B. TV signals from a satellite

C. ripples on the surface of a pond

D. nusical notes of an orchestra

Answer

Musical notes of an orchestra does not consist of transverse waves.

73. Question

Sound travels in air :

A. if particles of medium travel from one place to another

B. if there is no moisture in the atmosphere

C. if disturbance moves

D. if both, particles as well as disturbance move from one place to another

Answer

Sound travels in air if disturbance moves.

74. Question

In the sound wave produced by a vibrating turning fork shown in the diagram, half the wavelength is represented by: (picture)

A. AB B. BD

C. DE D. AE

Answer

half the wavelength is represented by BD.

75. Question

The maximum speed of vibrations which produce audible sound will be in :

A. dry air B. sea water

C. ground glass D. human blood

Answer

The maximum speed of vibrations which produce audible sound will be in ground glass.

76. Question

The sound waves travel fastest:

A. in solids B. in liquids

C. in gases D. in vacuum

Answer

The sound waves travel fastest in solids.

77. Question

The speeds of sound in four different media are given below. Which of the following is the most likely speed in m/s with which the two under water whales in a sea talk to each other when separated by a large distance?

A. 340 B. 5170

C. 1280 D. 1530

Answer

The most likely speed in m/s with which the two under water whales in a sea talk to each other when separated by a large distance. The speeds of sound is 1530.

78. Question

When the pitch of note produced by a harmonium is lowered, then the wavelength of the note:

A. decreases

B. first decreases and then increases

C. increases

D. remains the same

Answer

The pitch of note produced by a harmonium is lowered, then the wavelength of the note increases.

79. Question

The velocities of sound waves in four media P. Q, R and S are 18,000 km/h, 900 km/h, 0 km/h, and 1200 km/h respectively. Which medium could be a liquid substance?

A. P B. Q

C. R D. S

Answer

The velocities of sound waves in four media P. Q, R and S are 18,000 km/h, 900 km/h, 0 km/h, and 1200 km/h respectively. S medium could be a liquid substance.

80. Question

Which of the following can produce longitudinal waves as well as transverse waves under different conditions?

A. water B. TV transmitter

C. slinky D. tuning fork

Answer

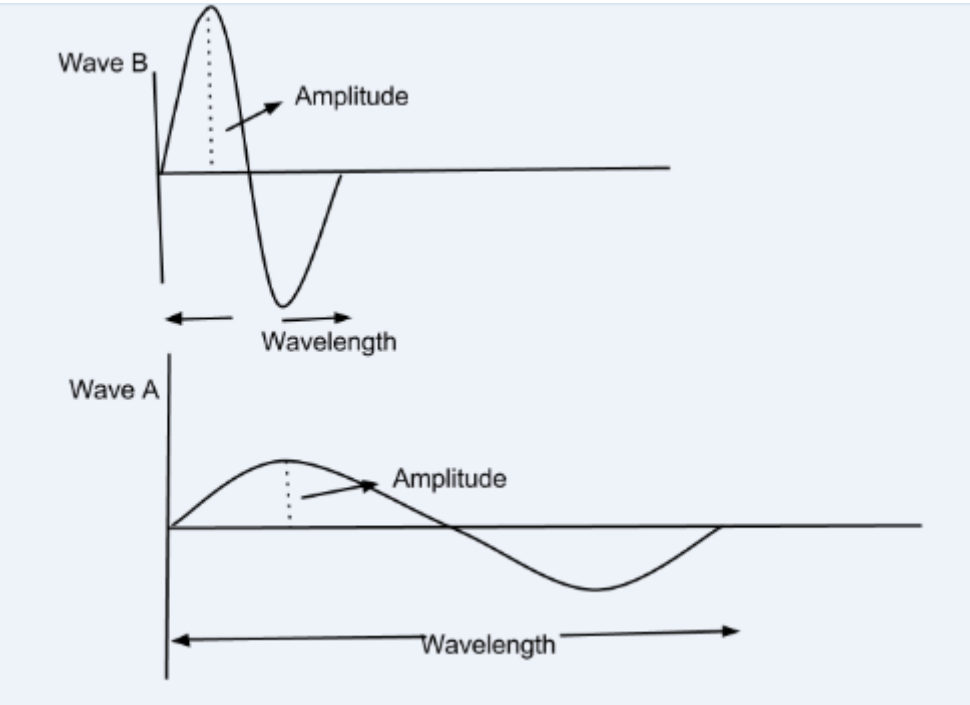
Slinky can produce longitudinal waves as well as transverse waves under different conditions.

Questions Based on High Order Thinking Skills (HOTS)-Pg-188

81. Question

Draw the sketches of two waves A and B that wave A has twice the wavelength and half the amplitude of wave B

Answer



82. Question

A device called oscillator is used to send waves along a stretched string. The string is 20 cm long, and four complete waves fit along its length when the oscillator vibrates 30 times per second. For the waves on the string:

(a) what is their wavelength?

(b) what is their frequency?

(c) what is their speed?

Answer

(a) 5cm would be their wavelength.

(b) Their frequence should be 120 Hz.

(c) Their speed should be 6m/s.

83. Question

Through which of the following materials can sound travel?

Wood, air, water, sream, ice, hydrogen, steel, diamond.

Answer

Through all the materials sound can travel.

84. Question

A sound producing body is at considerable distance from a man. There can be four different media W, X, Y and Z between the sound producing body and the man. The medium X brings the sound to man most quickly whereas medium Z tajes the maximum time. The time taken by medium W in bringing sound to man is less than that of X but more than that of Z. The medium Y, however, fails to bring the sound from the sound producing body to the man. Which medium could be the one:

(a) having no fixed shape and no fixed volume?

(b) having a fixed volume but no fixed shape?

(c) having the same composition as that on the moon?

(d) having a fixed shape and a fixed volume?

Answer

(a) Medium Z could be the one having no fixed shape and no fixed volume.

(b) Medium W could be the one having a fixed volume but no fixed shape.

(c) Medium Y could be the one having the same composition as that on the moon.

(d) Medium X could be the one having a fixed shape and a fixed volume.

85. Question

The longitudinal waves travel in a coiled spring at a rate of 4 m/s. The distance between two consecutive compressions is 20 cm. Find:

(i) Wavelength of the wave

(ii) Frequency of the wave

Answer

(i) The longitudinal waves travel in a coiled spring at a rate of 4 m/s. The distance between two consecutive compressions is 20 cm then its wavelength is 20 cm.

(ii) The longitudinal waves travel in a coiled spring at a rate of 4 m/s. The distance between two consecutive compressions is 20 cm then its frequency of the wave is 20 Hz.

Very Short Answer Type Questions-Pg-206

1. Question

Which property of sound leads of the formation of echoes?

Answer

The property of sound which leads to an echo is reflection of sound.

2. Question

What name is given to the repetition of sound caused by the reflection of sound waves?

Answer

The name given to the repetition of sound caused by the reflection of sound waves is echo.

3. Question

What name is given to the persistence of sound in a big hall or auditorium?

Answer

Reverberation is the name given to the persistence of sound in a big hall or auditorium.

4. Question

Name three devices which work on the reflection of sound.

Answer

megaphone, soundboard and stethoscope are devices which work on the reflection of sound.

5. Question

What is the other name of a loud-hailer?

Answer

The other name of a loud-hailer is megaphone.

6. Question

Name the three characteristic of sound.

Answer

The three characteristic of sound are:- loudness, pitch and timber.

7. Question

Name the unit used to measure the loudness of sound. Also write its symbol.

Answer

The loudness of sound is measured in decibel. Its symbol is dB.

8. Question

Name the characteristic which helps us distinguish between a man's voice and woman's voice, even without seeing them.

Answer

The characteristic which helps us distinguish between a man's voice and woman's voice, even without seeing them is pitch.

9. Question

How does the pitch of a sound depend on frequency?

Answer

Pitch of a sound is directly proportional to frequency. Higher the frequency, higher is the pitch of sound.

10. Question

Name the characteristic of sound which depends on

(a) amplitude

(b) frequency, and

(c) waveform.

Answer

(a) The characteristic of sound which depends on amplitude is loudness.

(b) The characteristic of sound which depends on frequency is pitch.

(c) The characteristic of sound which depends on waveform is timber.

11. Question

Name the characteristic of sound which can distinguish between the 'notes' (musical sounds) played on a flute and a *sitar* (both the notes having the same pitch and loudness).

Answer

The characteristic of sound which can distinguish between the 'notes' (musical sounds) played on a flute and a *sitar* (both the notes having the same pitch and loudness) is quality or timber.

12. Question

Name the organs of hearing in our body.

Answer

The organs of hearing in our body are ears.

13. Question

Name that part of ear which vibrates when outside sound falls on it.

Answer

Ear drums of ear viberates when outside sound falls on it.

14. Question

Name the three tiny bones present in the middle part of ear.

Answer

The three tiny bones present in the middle part of ear are:- anvil, hammer and stirrup.

15. Question

There are three small bones in the middle ear—anvil, hammer and stirrup:

(a) Which of these bones is in touch with ear-drum?

(b) Which of these bones is in touch with oval window?

Answer

(a) Hammer is in touch with ear-drum.

(b) The bones which is in touch with oval window is stirrup.

16. Question

What is the function of three tiny bones in the ear?

Answer

To increase the strength of vibration coming from ear drum is the main fuction of the three tiny bones in the ear.

17. Question

Name the tube which connects the middle ear to throat.

Answer

The tube which connects the middle ear to throat is eustachain tube.

18. Question

Name the nerve which carries electrical impulses from the cochlea of ear to the brain.

Answer

The nerve which carries electrical impulses from the cochlea of ear to the brain auditory nerve.

19. Question

What is the name of passage in outer ear which carries sound waves to the ear-drum?

Answer

The name of passage in outer ear which carries sound waves to the ear-drum is ear canal.

20. Question

Why should we not put a pin or pencil in our ears?

Answer

We should not put a pin or pencil in our ears because they can us deaf if our ear drum gets damaged

21. Question

What type of scans are used these days to monitor the growth of developing baby in the uterus of the mother?

Answer

To monitor the growth of developing baby in the uterus of the mother we use ultrasound scans.

22. Question

How is an ultrasound scan for fetus (unborn baby) better than aX-ray?

Answer

X-ray can damage the delicate body cell of the unborn baby, so ultrasound scan for fetus (unborn baby) better than X-ray.

23. Question

What is the name if the device which is used to find the depth of sea (or ocean) by using ultrasonic sound waves?

Answer

To find the depth of sea (or ocean) by using ultrasonic sound waves we use a device, named SONAR

24. Question

Write the full name of 'SONAR'.

Answer

The full name of 'SONAR' is Sound Navigation And Ranging.

25. Question

Name the principle on which a soundboard works.

Answer

The principle on which a soundboard works is reflection of sound.

26. Question

Name the device which is used to address a small gathering of people.

Answer

The device which is used to address a small gathering of people megaphone.

27. Question

Name the device used by doctors to listen to our heartbeats.

Answer

The device used by doctors to listen to our heartbeats is stethoscope.

28. Question

What is the shape of a soundboard kept behind the speaker on the stage of a big hall?

Answer

a soundboard kept behind the speaker on the stage of a big hall is concave in shape.

29. Question

Name two sound absorbing materials (or obhects) which can make our big room less echoey.

Answer

The two sound absorbing materials are :- Mass- loaded vinyl and sound courtains.

30. Question

Can we hear

(a) infrasonic waves

(b) ultrasonic waves?

Answer

(a) NO, we cannot hear infrasonic sound.

(b) NO, we cannot here ultrasound.

31. Question

What name is given to the sound waves of frequency too low for humans to hear?

Answer

The name given to the sound waves of frequency too low for humans to hear is infrasound.

32. Question

What name is given to the sound waves of frequency too high for humans to hear?

Answer

Ultrasound name is given to the sound waves of frequency too high for humans to hear.

33. Question

What type of sound waves are produced by a vibrating simple pendulum?

Answer

Infrasound waves are produced by a vibrating simple pendulum.

34. Question

What happens to the loudness of a sound if its amplitude decreases?

Answer

We hear less loud sound as amplitude affects volume.

35. Question

What happens to the loudness of a sound if its amplitude decreases?

Answer

We hear less loud sound as amplitude affects volume.

36. Question

What name is given to sound waves of frequencies higher than 20 kHz?

Answer

Ultrasonic sound wave is the name given to sound waves of frequencies higher than 20 kHz.

37. Question

Fill in the following blanks with suitable words:

(a) An echo is simply a ……. Sound.

(b) Pitch od sound depends on …….

(c) Loudness of sound depends on …….

(d) Quality of sound depends on …….

(e) Echoes are caused by the ……of sound.

Answer

(a) An echo is simply a reflected Sound.

(b) Pitch od sound depends on frequency.

(c) Loudness of sound depends on amplitude.

(d) Quality of sound depends on waveform.

(e) Echoes are caused by the reflection of sound.

Short Answer Type Questions-Pg-207

38. Question

On which day, a hot day or a cold day, an echo is heard sooner? (Give reason for your answer.

Answer

During a hot day an echo is heard sooner. The speed of sound is high when the temperature is high, so on a hot day an echo is heard sooner.

39. Question

In which medium, air or water, an echo is heard much sooner? Why?

Answer

In water an echo is heard sooner. Because in water the speed of sound is more then that of the air.

40. Question

What is reverberation? What will happen if the reverberation time in a big hall is too long?

Answer

Due to the repeted reflection from the walls, and celing a presistance sound is produced which is known as reverberation. When the reverberation time is too long in a big hall, the sound becomes confusing due to overlapping of sounds.

41. Question

How can reverberations in a big hall or auditotium be reduced?

Answer

Following are some of the methods to reduce the reverberation in a big hall or auditorium:-

1) Sound absorbing materials should be used to make panels for the walls of the hall.

2) To absorbe sound and reduce the reverberation carpets are used on the flor.

3) To absorve sound heavy curtains should be used on the doors and windows.

4) Materials with sound absorving properties should be used for making seats.

42. Question

Why do we hear more clearly in a room with curtains then a room withour curtains?

Answer

Curtains are poor reflector of sound and hence they absorve most of the sound falling on them. Due to this it donot let echo to occur. On the other

hand echo occurs in the room without curtains. So we hear more clearly in a room with curtains then a room withour curtains.

43. Question

What is a megaphone? Name the principle on which a megaphone works.

Answer

A large cone shaped device used for amplifying and directing the voice of a person who speaks into it is known as megaphone. Multiple reflection of sound is the prilciple on which it works.

44. Question

What is a bulb horn? Name the principle on which a bulb horn works.

Answer

A cone shaped air instrument used for signalling in cars, bicycle, busses etc. is known as bulb horn. A bulb horn works on the principle of multiple reflection of sound.

45. Question

What is a stethoscope? Name the principle on which a stethoscope works.

Answer

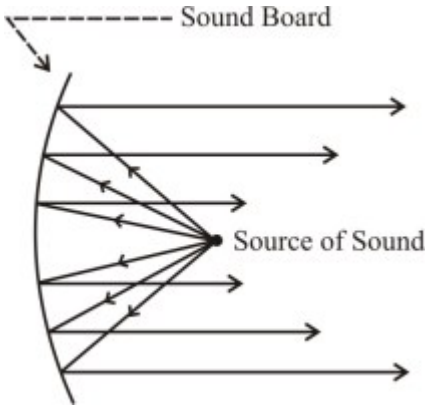
A medical instrument used by the doctors for listening the sounds inside the human body specialy for the hearts and lungs is known as stethoscope. It works on the principle of multiple reflection of sound.

46. Question

What is a soundboard? Explain the working of a soundboard with the help of a labelled diagram.

Answer

A concave board is placed behind the speakers of a large hall is known as a sound board. This is used so that voice can be heard to every person sitting in that hall at a considerable distance. The sound board works as follow:- the speakers are mde to stand on the focus of the concave board. The concave sound board reflects the sound back to the audience (meaning it donot allow sound to go in different direction). This helps in uniform distribution of sound in the hall and even the person sitting last in the hall can hear the sound clearly. It can be seen from the diagram



47 A. Question

What is meant by the 'loudness' of sound? On what factor does the loudness of a soind depend?

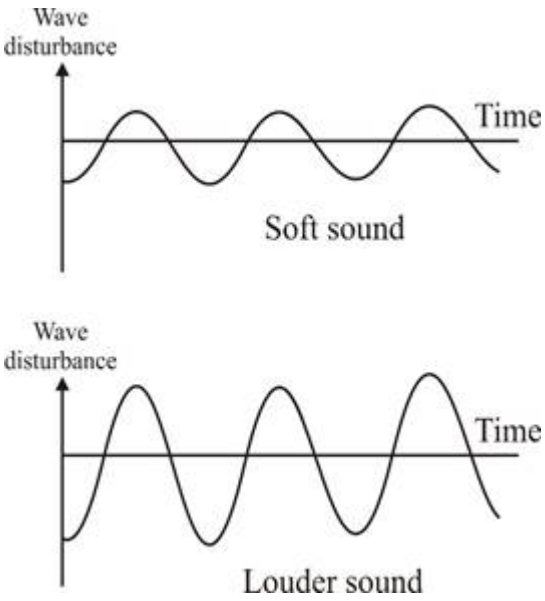
Answer

The measure of sound energy reaching per secon the ear is known as loudness of sound. Amplitude of the sound wave is responsible for it.

47 B. Question

Draw labelled diagrams to represent (a) soft sound, and (b) loud sound, of the same frequency.

Answer



48 A. Question

Explain the term 'pitch' of a sound. On what factor does the 'pitch' of a sound depend?

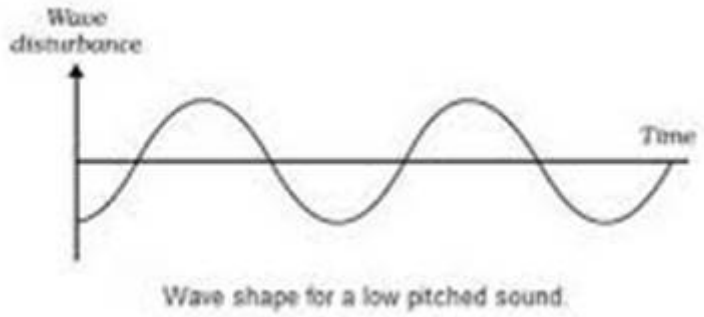
Answer

A characterstic of sound which helps to identify the sound of same loudness is known as pitch. The pitch depends on the amplitude of the sound wave.

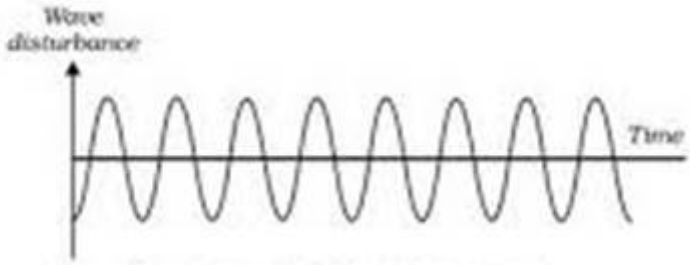
48 B. Question

Draw labelled diagrams to represent sound of (a) low pitch, and (b) high pitch, of the same loudness.

Answer



Wave shape for a low pitched sound.



Wave shape for a high pitched sound.

49. Question

What is meant by the quality (or timbre) of sound? On what factor does the quality (or timbre) of a sound depend?

Answer

A charestristic of sound through which we can distinguish between the sounds having same pitch and loudness produced by different musical instrument is known as quality (or timber). The shape of the sound wave produced decide the quality of the sound produced.

50. Question

Explain why, if we strike a table lightly, we hear a soft sound but if we hit the table hard, a loud sound is heard.

Answer

The table top viberates with a less amplitude when we strike it lightly. This lead to produce a soft sound because the energy supplied to the top of the table is low, so the amplitude is low. But on the other hand when we strike the tabe very hard then the energy supplied to the table is very high, this makes the top of the table to viberate rapidely and hence a loud sound is heard.

51. Question

Give one use of ultrasound in industry and one in hospitals.

Answer

one use of ultrasound in industry is, for detecting flows in metal block.

One use of ultrasound in hospital is, to investigate the internal organs of the human body.

52. Question

How is it that bats are able to fly at night without colliding with other objects?

Answer

The bats are able to fly at night without colliding with other objects because they emits a very high frequency ultrasonic soundwaves while flying and listen to the echoes produced by the sound emitted by them from any object or obstacles. From the echo they can determine the distance of the object and hence avoid collision.

53. Question

Explain how, bats use ultrasound to catch the prey.

Answer

The bats emit a very high frequency ultrasonic soundwaves while flying and listen to the echoes produced by the sound emitted by them from any prey. Judging by the time taken by the echo they catches their prey.

54. Question

Explain how, flaws (or defects) in a metal block can be detected by using ultrasound.

Answer

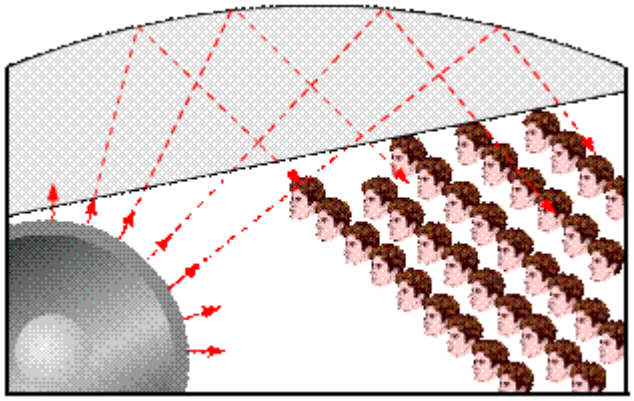
The ultrasound waves are prepared to pass through a metal block's one face and ultrasound detectors are placed on the other face of the block to detect the transmitted wave. When the detector donot detect the transmited wave as desired then in that case the metal block have flaws in it.

55. Question

Why are the ceilings of concert halls made curved? Draw a labelled diagram to illustrate your answer.

Answer

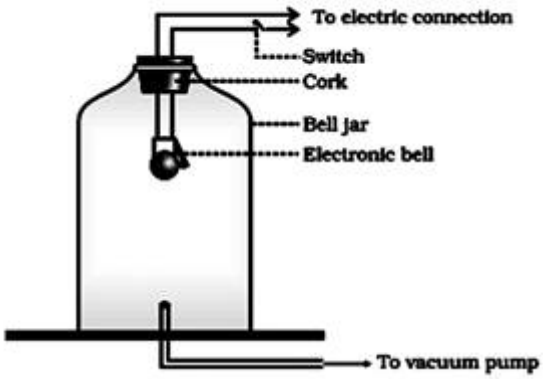
TO make the sound audiable to every person sitting in the hall it is nessecary to make the cilings of the hall curved in shape, so that it reflect all the sound waves informaly.



56. Question

Draw a labelled diagram to show the multiple reflections of sound in apart of the stethoscope tube.

Answer



57. Question

What is the range of frequencies associated with

(a) infrasound

(b) audible sound, and range of the frequeny

Answer

The range of the frequency of infrasound is below 20Hz.

The range of the frequency of audiable sound is form 20Hz to 20000 Hz.

The range of the frequency of the ultrasound is above 20KHz.

58 A. Question

What is the difference between infrasonic waves and ultrasonic waves?

Answer

The range of the frequency of infrasound is below 20Hz. Where as the range of the frequency of the ultrasound is above 20KHz.

58 B. Question

Choose the infrasonic waves and ultrasonic waves from the following frequencies:

(i) 10,000 Hz (ii) 30,000 Hz

(iii) 18 Hz (iv) 50,000 Hz

(v) 10 Hz

Answer

infrasonic sound :- 18Hz, 10Hz., ultrasound :- 30,000 Hz, 50,000 Hz.

59 A. Question

What is the frequency range of hearing in humans?

Answer

The frequency range of hearing in humans is from 20Hz to 20,000 Hz.

59 B. Question

Which of the following sound frequencies cannot be heard by a human ear?

(i) 10 Hz (ii) 100 Hz

(iii) 10,000 Hz (iv) 15 Hz

(v) 40,000 Hz

Answer

sound frequencies cannot be heard by a human ear:- 10 Hz, 15 Hz, and 40,000 Hz.

60. Question

The echo of a sound is heard after 5 seconds. If the speed of sound in air be 343 m/s, calculate the distance of the reflecting surface.

Answer

Speed= distance/time.

So, distance= speed*time.

D= 343 m/s*5

D= 1715 m.

61. Question

The speed of sound in water is 1500 metres per second. How far away from an under-sea rock should a deep sea diver be so that he can hear his own echo?

Answer

Speed = 1500 m/sec

Distance = 1500 × 0.1 = 150 m

So, Distance between the diver and under sea rock = 150/2 = 75 m

Long Answer Type Questions-Pg-208

62 A. Question

What is meant by 'reflection of sound'? What type of surface are the best reflecting sound?

Answer

when after heating a hard surface sound bounce back, this is known as reflection of sound. Hard solid surface is best for reflection of sound.

62 B. Question

Name any two objects which are good reflectors of sound.

Answer

metal sheet and hard wood are good reflector of sound.

62 C. Question

State the laws of reflection of sound.

Answer

The laws of reflection of sound are:-

(i) The normal, incident wave and the reflected wave all lie on the same plane at the point of incidence.

(ii) the angle of incidence of sound is always equal to the angle of reflaction.

63 A. Question

What is an echo? How is echo formed?

Answer

The repetition of sound wave caused by the reflection of sound wave is called echo. For an echo to happen it requires a hard surface like a tall brick wall or clif to bounce the sound back.

63 B. Question

What is the minimum distance in air required from a sound reflecting surface to hear an echo (at 20°C)?

Answer

The minimum distance in air required from a sound reflecting surface to hear an echo (at 20°C) is 17.2 m.

63 C. Question

A man standing 825 metres away from a cliff (steep rock) fires a gun. After how long will he hear its echo? Speed of sound in air is 33 m/s.

Answer

A man standing 825 metres away from a cliff (steep rock) fires a gun.

Distance=speed*time

Time= distance/speed

Time= 825/330

Time= 2.5 seconds.

64 A. Question

What is ultrasound? What is the difference between ordinary sound and ultrasound?

Answer

The sound wave with the frequency above 20,000 Hz. The ordinary sound wave has the frequency from 20 Hz to 20,000 Hz. Where as the ultrasound wave has the frequency above 20,000 Hz.

64 B. Question

Write any three applications (or use) of ultrasound.

Answer

The applications of ultrasound are:-

1) in industries to detect the flaws in metal block.

2) in hospitals to see the growth of fetus inside the mother's uterus.

3) in hospital to detect the problems in liver, kidney.

65 A. Question

What are infrasonic waves? Name two animals which produce infrasonic waves.

Answer

Infrasonic are vibration of frequency less than 20 Hz. Whales and elephants produced infrasonic.

65 B. Question

What are infrasonic waves? Name two animals which can produce ultrasonic waves.

Answer

Sound waves of frequencies greater than 20,000 Hz are called ultrasonic waves. Porpoises and bats produce ultrasonic waves.

65 C. Question

The audible range of frequencies of an average human ear is from 20 Hz to 20 kHz. Calculate the corresponding wavelengths. (Speed of sound in air is 344 m s^{-1}).

Answer

$\lambda_1 = v/f = 344/20 = 17.2$ m

$\lambda_2 = v/f = 344/20000 = 0.0172$ m

66 A. Question

Define the following terms:

(1) Echolocation

(2) Echocardiography, and

(3) Ultrasonography.

Answer

(1) Echolocation is the technique by which objects are located by sensing time of echo of the sound emitted

(2) Formation of image of the heart by reflection of ultrasound from heart IS called echocardiography.

(3) Creating images of different parts of the body by means of reflection of ultrasound is called Ultrasonography.

66 B. Question

Name an animal which navigates and find food by echolocation.

Answer

Bats

66 C. Question

Which of the two produces ultrasonic waves: porpoise or whale?

Answer

Whale produces ultrasonic waves

67 A. Question

What is sonar? Explain its use.

Answer

SONAR stand for Sound, Navigation And Ranging. It is a device used to measure distance, direction and speed of underwater objects _ It has a transmitter and detector near its base. The transmitter transmits ultrasonic signals which get reflected by various underwater objects. These are received by the detector which can convert these waves into appropriate electrical signals and give us the required Information.

67 B. Question

A sonar station picks up a return signal after 3 seconds. How far away is the object? (Speed of sound in water = 1440 m/s).

Answer

Time of echo = 3 s

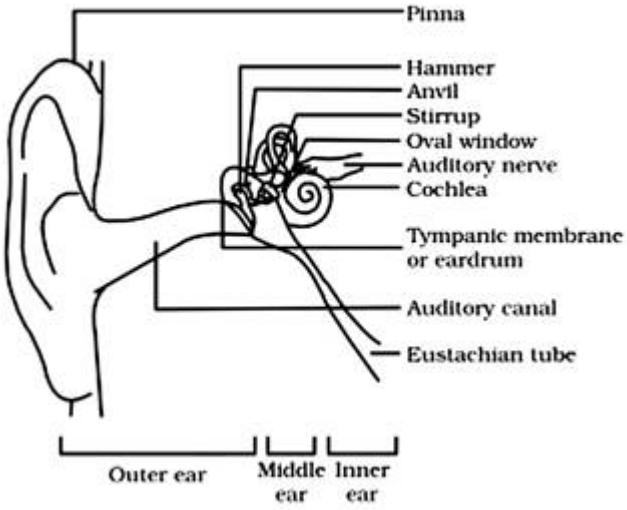
speed of sound = 1440 m/s

Distance = $(v \times t)/2 = (1440 \times 3)/2 = 2160$ m

68. Question

Draw a neat and labelled diagram of the human ear. With the help of this diagram, explain the construction and working of the human ear.

Answer



Hearing is possible through auditory organ. But the inner ear also accommodate the sensory orgain for the balance of the sense. Both constitue of one unit. The outer ear, middle ear and cochlea of the inner ear constitute the organ for perceiving sound.

The outer ear includes the auricle (concha auriculae) and the external auditory canal (meatus acusticus externs) together the eardrum (membrana tympani) as boundary between the outer ear and middle ear (cavum tympani).The middle ear is also called the tympanic cavity (cavum tympani), which is continued in the Eustachian tube (tuba auditiva) as connection to the upper part of the throat.

The inner ear has a highly complex system of passages and cavities called the bony labyrinth. It is filled with a liquid, the perilymph. In this liquid there is a membranous labyrinth similarly filled with liquid (endolymph). This is the organ for auditory sensation but also the organ of balance (vestibular system).The hearing organ is a particularly important sensory organ since, apart from the ability to hear, it is a prerequisite for developing speech. This is why it is more important than the eye.

Multiple Choice Questions (MCQs)-Pg-208

69. Question

In SONAR we use:

A. ultrasonic waves

B. infrasonic waves

C. radio waves

D. audible sound waves

Answer

In SONAR we use ultrasonic waves.

70. Question

When we change a feeble sound to a loud sound, we increase its:

A. frequency B. amplitude

C. velocity D. wave length

Answer

When we change a feeble sound to a loud sound, we increase its amplitude.

71. Question

Which kind of sound is produced in an earthquake before the main shock wave begins?

A. ultrasound B. infrasound

C. audible sound

D. none of the above

Answer

Infrasound is produced in an earthquake before the main shock wave begins.

72. Question

Before playing the orchestra in a musical concert, a sitarist tries to adjust the tension and pluck the strings suitably. By doing so he is adjusting:

A. intensity of sound only

B. amplitude of sound only

C. frequency of the sitar string with the frequency of other musical instruments

D. loudness of sound

Answer

Before playing the orchestra in a musical concert, a sitarist tries to adjust the tension and pluck the strings suitably. By doing so he is adjusting the frequency of the sitar string with the frequency of other musical instruments.

73. Question

'Note' os a sound:

A. of a mixture of several frequencies

B. of mixture of only two frequencies

C. of a single frequency

D. always unpleasant to listen to

Answer

'Note' of a sound of a single frequency.

74. Question

A key of mechanical piano is first struck gently and then struck again but much harder this time. In the second case:

A. sound will be louder but pitch will not be different

B. sound will be louder and the pitch will also be higher

C. sound will be luder but pitch will be lower

D. both loudness and pitch will remain unaffected

Answer

A key of mechanical piano is first struck gently and then struck again but much harder this time. In the second case sound will be louder but pitch will not be different.

75. Question

one of the following can hear infrasound. This one is :

A. dog B. bat

C. rhinoceros D. humans

Answer

Rhinoceros can hear infrasound sound.

76. Question

An echo-sounder in a trawler (fishing boat) receives an echo from a shoal of fish 0.4 s after it was sent. If the speed of sound in water is 1500 m/s, how deep is the shoal?

A. 150 m B. 300 m

C. 600 m D. 7500 m

Answer

An echo-sounder in a trawler (fishing boat) receives an echo from a shoal of fish 0.4 s after it was sent. If the speed of sound in water is 1500 m/s, the shoal is 300 m deep.

77. Question

The speed of highly penetrating ultrasonic waves is:

A. lower than those of audible sound waves

B. higher than those of audible sound waves

C. much higher than those of audible sound waves

D. same as those of audible sound waves

Answer

The speed of highly penetrating ultrasonic waves is same as those of audible sound waves.

78. Question

The ultrasound waves can penetrate into matter to a large extent because they have :

A. very high speed

B. very high frequency

C. very high wavelength

D. very high amplitude

Answer

The ultrasound waves can penetrate into matter to a large extent because they have very high frequency.

79. Question

The frequencies of four sound waves are given below. Which of these sound waves can be used to measure the depth of sea by the echo method?

A. 15,000 Hz B. 10 kHz

C. 50 kHz D. 10,000 Hz

Answer

50 Hz sound waves can be used to measure the depth of sea by the echo method.

80. Question

Which of the following frequency of sound can be generated by a vibrating simple pendulum as well as by the vibrating vocal cords of a rhinoceros?

A. 5 kHz B. 25 Hz

C. 10 Hz D. 15,000 Hz

Answer

10 Hz frequency of sound can be generated by a vibrating simple pendulum as well as by the vibrating vocal cords of a rhinoceros.

81. Question

Which of the following device does not work on the multiple reflections of sound waves?

A. stethoscope B. hydrophone

C. soundboard D. megaphone

Answer

Hydrophone, device does not work on the multiple reflections of sound waves.

82. Question

What type of waves are generated by SONAR device fixed to a fishing ship?

A. water waves B. radio waves

C. sound wavesD. infrared waves

Answer

Sound waves are generated by SONAR device fixed to a fishing ship.

83. Question

We can distinguish between the musical sounds produced by different singers on the basis of the characteristic of sound called:

A. frequency B. timbre

C. pitch D. loudness

Answer

Pitch can distinguish between the musical sounds produced by different singers on the basis of the characteristic of sound.

84. Question

At 20°C, the minimum distance of a person from a sound reflecting surface to hear an echo is :

A. 12.2 m B. 17.2 m

C. 15.2 m D. 34.4 m

Answer

At 20°C, the minimum distance of a person from a sound reflecting surface to hear an echo is 17.2 m.

Questions Based on High Order Thinking Skills (HOTS)-Pg-209

85. Question

The drawing shoes a ship 800 m from a cliff. A gun is fired on the ship. After 5 seconds the people at the front of the ship hear the sound of the gun again.

(a) What is the name of this effect?

(b) What happens to the sound at the cliff?

(c) How far foes the sound travel in 5 seconds?

(d) Calculate the speed of sound.

Answer

(a) The name of this effect is echo.

(b) Sound get reflected at the clif.

(c) In 5 seconds sound goes upto 1600 m.

(d) The speed of sound is 320 m/s.

86. Question

Consider the following sound waves marked A, B, C and D:

(a) Which two waves represent sounds of the same loudness but different pitch?

(b) Which two waves represent sounds of the same frequency but different loudness?

(c) State whether all these sound waves have been produced by the same vibrating body or different vibrating bodies?

(d) Which vibrating body/bodies could have generated the sound waves shown here?

Answer

(a) A and D are two sund waves which represent sounds of the same loudness but different pitch.

(b) B and D are two waves which represent sounds of the same frequency but different loudness.

(c) All these sound waves have been produced by the same vibrating body.

(d) Tuning forks could have generated the sound wave shown here.

87. Question

In an experiment, Anhad studies sound waves. He sets up a loudspeaker to produce sound as shown below:

Picture

Anhad adjusts the signal to the loudspeaker to give a sound of frequency 200 Hz.

(a) What happens to the air in-between Anhas and the loudspeaker?

(b) Explain how Anhad receives sound in both ears.

Answer

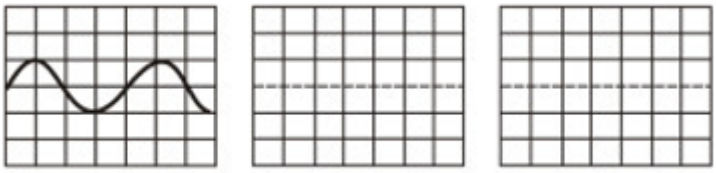
(a) When Anhad adjusts the signal to the loudspeaker to give a sound of frequency 200 Hz then the air between Anhad and the loudspeaker vibrates with the frequency of 200 Hz.

(b) Both the ear of Anhad recives the sound. His right ear recives the sound by the sound waves coming directly from the loudspeaker (through air)where as his left ear recives the sound from sound waves reflected from the wall of classroom.

88. Question

Figure X showa a trace of a sound wave produced by a particular tuning fork:

Picture

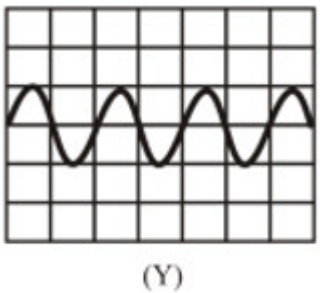


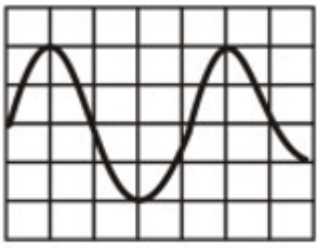
(a) On the graph paper given in Figure Y, draw a trace of the sound wave which has higher frequency than that shown in Figure X.

(b) On the graph paper shoen in Figure Z, draw a trace of the sound wave which has a larger amplitude than that shown in Figure X.

Answer

(a)



(b) 

(Z)

89. Question

Three different vibrating objects produce three types of sounds X, Y and Z. Sounds X and Y cannot be heard by a man having normal range of hearing but sound Z can be heard easily. The sound X is used in hospitals to break kidney stones of a patient into fine grains whioch then get flushed out with urine. The sound Y is similar to that which is produced during an earthquake before the main shock wave is generated.

(a) What type of sounds are (i) X, (ii) Y, and (iii) Z?

(b) Name one device which can produce sound like X.

(c) Name one device in a science laboratory which can produce sound like Y.

(d) Name one device in our homes which can produce sound like Z.

(e) What is the frequency range of sounds like Z?

Answer

(a) X is ultrasonic sound, Y is infrasonic sound, and Z is audiable sound.

(b) Ultrasound machine can produce sound like X.

(c) A device in a science laboratory which can produce sound like Y is simple pendulum.

(d) The frequency range of sounds like Z is 20 Hz to 20000 Hz.

90. Question

What is kidnapped, blindfolded and imprisoned in a big room. How could the man tell if he was in:

(a) a city (b) a village

(c) a bare room (d) a furnished room?

Answer

(a) if the man hears lot of noise of heavy traffic then he is in a city.

(b) if the man hears very little noise of traffic then he is in a village.

(c) if he hears echoes of person talking he is in a bare room.

(d) if he hears less echoes then he is in a furnished room.