8th Science Lesson 15 Questions in English

15] Sound

1. Which of these objects produce sound?
a) Vibrating objects
b) Oscillating objects
c) Stationary objects
d) All the above
Explanation
Sound is produced when an object is set to vibrate.

2. Which of this motion used to vibrate an object?
a) Linear motion
b) To and fro motion
c) Oscillatory motion
d) Circulatory motion
Explanation
Vibration means a kind of rapid to and fro motion of an object. This to and fro motion of the body causes the substances around it to vibrate. Thus sound spreads to the surroundings.

3. Assertion (A): Sound is an energy form needs a medium to travel.
Reasoning (R): Medium is any substance through which sound is transmitted.
a) Both A and R is True and R is the correct explanation of A.
b) Both A and R is True but R is not the correct explanation of A.
c) A is True but R is False.
d) Both A and R is False.
Explanation
The substance through which sound is transmitted is called medium. Sound moves through a medium from the point of generation to the listener. Sound is a form of energy and it needs a medium to travel.

4. Which of this device was invented by Thomas Alva Edison?
a) Phonograph
b) Radiograph
c) Telegraph
d) Seismograph
Explanation
Thomas Alva Edison in 1877 invented the phonograph a device that played the recorded sound.

5. Choose the Incorrect statements.
i) Sound cannot travel in vacuum space.
ii) Sound travels in water and solids and gases.
iii) Speed of sound is less in solid than liquid and gas.
a) i only
b) ii only
c) iii only
d) None of the above
Explanation
Sound cannot travel in vacuum and it needs a medium like air. Sound travels in water and solids also. The speed of sound is more in solids than in liquids and it is very less in gases.

6. Which of these represents the speed of sound?
a) n
b) β
c) σ
d) Δ
Explanation
The speed of sound is the distance travelled by it in one second. It is denoted by 'v'. It is represented by the expression, v = nλ, where 'n' is the frequency and 'λ' is the wavelength.

7. Choose the correct statements.
i) Distance between two consecutive particles of various phase of vibration is wavelength.
ii) Wavelength is denoted by the Latin symbol.
iii) The unit of wavelength is meter per second.
a) i only
b) ii only
c) iii only
d) All the above
Explanation
Wavelength is the distance between two consecutive particles, which are in the same phase of vibration. It is denoted by the Greek letter. The unit of wavelength is meter (m).

8. Which of these statements is not true regarding frequency?
a) It is the number of vibrations of a particle in vacuum.
b) The unit of frequency is hertz.
c) Frequency is calculated in any medium in one second.
d) Frequency is denoted by n.
Explanation

Frequency is the number of vibrations of a particle in the medium in one second. It is denoted by 'n'. The unit of frequency is hertz (Hz).

9. What is the wavelength of the sound of frequency of 25 Hz and speed 250ms-1?
a) 10Hz
b) 100m
c) 10m
d) 100 Hz
Explanation
Given, v = 250 ms-1, n = 25 Hz
$v = n\lambda$
$\lambda = 250 / 25 = 10m$

10. Which of these physical properties does not make any effect in the speed of sound?
a) Temperature
b) Shape
c) Pressure
d) Humidity
Explanation
The speed of sound depends on the properties of the medium through which it travels, like temperature, pressure and humidity.

11. What is the effect of sound if there is a temperature rise in a medium?
a) Increases
b) No effect
c) Decreases
d) Inaudible
Explanation
In any medium, as the temperature increases the speed of sound also increases. For example, the speed of sound in air is 331 ms-1at 0°C and 344 ms-1 at 22°C.

12. Match the speed of substances.

A. Distilled water	i) 6420
B. Aluminum (Solid medium)	ii) 1530
C. Sea water	iii) 5950
D. Iron (Solid medium)	iv) 1498

a) ii, iii, iv, i
b) iv, i, ii, iii
c) iii, iv, i, ii
d) iv, iii, i, ii

Explanation

Speed of sound in different media at 25°C

State	Substance	Speed (ms-1)
Solids	Aluminum	6420
	Steel	5960
	Iron	5950
Liquid	Sea Water	1530
	Distilled Water	1498
Gases	Aluminum	6420
	Steel	965
	Iron	346
	Iron	316

13. Assertion (A): The speed of sound decrease with increase in humidity.
Reasoning (R): The density of air increases with increase in humidity.
a) Both A and R is True and R is the correct explanation of A.
b) Both A and R is True but R is not the correct explanation of A.
c) A is True but R is False.
d) Both A and R is False.
Explanation
The amount of water vapor in the air is known as humidity. It is less during winter and more during summer. The speed of sound increases with increase in humidity. This is because the density of air decreases with increase in humidity.

14. Identify the correct sequence of a sound travel.
i) The process of energy transfer continues till the sound reaches the destination.
ii) The vibrating body particles displace the equilibrium particles of the body in contact.
iii) A vibrating body changes the position of particles with the contacting medium.
iv) The force or energy is transferred to all particles of the body in contact.
v) The adjacent particles of the contact body gets force from the vibrating body.
a) ii, iii, iv, i, v
b) iii, ii, v, iv, i
c) i, v, iv, iii, ii
d) iii, iv, v, i, ii
Explanation

When a body vibrates, the particle of the medium in contact with the vibrating body is first displaced from its equilibrium position. It then exerts a force on the adjacent particle. This process continues in the medium till the sound reaches the ear of the person.

15. Choose the Incorrect statements.
i) The region of compression created by a vibrating object is of high pressure.
ii) The Refraction is the low pressure region created in a vibrating body.
iii) The compressions and refractions produce the sound and make it propagate.
a) i only
b) ii only
c) iii only
d) None of the above
Explanation
When a vibrating tuning fork moves forward, it pushes and compresses the air in front of it, creating a region of high pressure. This region is called a compression (C). When it moves backward, it creates a region of low pressure called rarefaction (R). These compressions and rarefactions produce the sound wave, which propagates through the medium.

16. _____ is a disturbance propagating due to _____ motion of the particles of the medium.
a) Mechanical wave, periodic
b) Electric wave, non-periodic
c) Longitudinal wave, regular
d) Transverse wave, irregular
Explanation
Mechanical wave is a disturbance which propagates in a medium due to the repeated periodic motion of the particles of the medium from their mean position. The disturbance which is caused by the vibrations of the particles is passed over to the next particle. It means that the energy is transferred from one particle to another as a wave motion.

17. Which of these are the characteristic of wave motion?
a) The particles are also transferred with energy in a wave motion.
b) The medium must possess some of the properties of particles for mechanical wave propagation.
c) The velocity of wave motion is same as the velocity of the vibrating particle.
d) The propagating medium can have maximum friction and un-uniform density for wave propagation.
Explanation
Characteristic of wave motion: In wave motion, only the energy is transferred not the particles. The velocity of the wave motion is different from the velocity of the vibrating particle. For the propagation of a mechanical wave, the medium must possess the properties of inertia, elasticity, uniform density and minimum friction among the particles.

18. How many mechanical waves are categorized?
a) 2
b) 3
c) 5
d) 4
Explanation
There are two types of mechanical wave. They are Transverse wave and longitudinal wave.

19. Choose the Incorrect statements.
i) In transverse waves particles of the medium vibrate perpendicular to the direction of propagation.
ii) Transverse waves are produced only in gases.
iii) Light waves and strings waves are examples of transverse waves.
a) i only
b) ii only
c) iii only
d) None of the above
Explanation
Transverse wave: In a transverse wave the particles of the medium vibrate in a direction, which is perpendicular to the direction of propagation of the wave. E.g. Waves in strings, light waves etc. Transverse waves are produced only in solids and liquids.

20. Which of the following is not an example of longitudinal waves?
a) Light waves
b) Springs waves
c) Sound waves
d) Electric waves
Explanation
In a longitudinal wave the particles of the medium vibrate in a direction, which is parallel to the direction of propagation of the wave. E.g. Waves in springs, sound waves in a medium.

21. In which of these medium the longitudinal waves are produced?
a) Gas
b) Solid
c) Liquid
d) All the above
Explanation
Longitudinal waves are produced in solids, liquids and also in gases.

22. Choose the incorrect statements regarding the seismic waves.

a) Seismic waves are example for transverse wave.

b) Seismic waves travel through the layers of earth.

c) Seismology is the study of science dealing with study of seismic waves.

d) Hydrophone and seismometer are used to study and record the seismic waves.

Explanation

The seismic wave formed during earthquake is an example for a longitudinal wave. Waves travelling through the layers of the Earth due to explosions, earthquakes and volcanic explosions are called seismic waves. Using a hydrophone and seismometer one can study these waves and record them. Seismology is the branch of science that deals with the study of seismic waves.

23. Which of these factors affect the loudness of the sound?

a) Frequency

b) Temperature

c) Amplitude

d) Pressure

Explanation

Loudness is defined as the characteristic of a sound that enables us to distinguish a weak or feeble sound from a loud sound. The loudness of a sound depends on its amplitude. Higher the amplitude louder will be the sound and vice versa. When a drum is softly beaten, a weak sound is produced. However, when it is beaten strongly, a loud sound is produced.

24. Define amplitude.

a) The difference in the displacement between its minimum and maximum values.

b) The maximum displacement of a vibrating particle from its mean position.

c) The total displacement from the initial position.

d) The ratio between the displacement and the mean value.

Explanation

Amplitude is the maximum displacement of a vibrating particle from its mean position. It is denoted by 'A'.

25. Assertion (A): The unit of loudness of a sound is decibel (dB).

Reasoning (R): The unit of amplitude which defines the loudness of a sound is meter(m).

a) Both A and R is True and R is the correct explanation of A.

b) Both A and R is True but R is not the correct explanation of A.

c) A is True but R is False.

d) Both A and R is False.

Explanation

The loudness of a sound depends on its amplitude. The unit of loudness of sound is decibel (dB). The unit of amplitude is 'meter' (m).

26. Choose the correct statements.
i) Pitch of a sound distinguishes between the flat and shrill sound.
ii) Low pitch produces the higher sound.
iii) High pitch adds amplitude to the sound.
a) i only
b) ii only
c) iii only
d) All the above
Explanation
The pitch is the characteristic of sound that enables us to distinguish between a flat sound and a shrill sound. Higher the frequency of sound, higher will be the pitch. High pitch adds shrillness to a sound. The sound produced by a whistle, a bell, a flute and a violin are high pitch sounds.

27. The voice of female,
i) Low pitch than a male voice.
ii) Shriller than a male's voice.
a) i only
b) ii only
c) Both i and ii
d) Neither i nor ii
Explanation
The voice of a female has a higher pitch than a male. That is why a female's voice is shriller than a male's voice. Some examples of low pitch sound are the roar of a lion and the beating of a drum.

28. Which of the following is the characteristic of the quality of timbre?
a) Distinguishes same pitch sounds.
b) Used for identifying different frequency voices.
c) Used to distinguish between two sounds having same pitch and amplitude.
d) Time division multiplexing of various pitches of sounds.
Explanation
The quality or timbre is the characteristic of sound that enables us to distinguish between two sounds that have the same pitch and amplitude. For example in an orchestra, the sounds produced by some musical instruments may have the same pitch and loudness. Yet, you can distinctly identify the sound produced by each instrument.

29. How many types of sound signals are classified based on the frequency?
a) 4
b) 7
c) 3

d) 5

Explanation

According to the frequency we can classify the sound into three types. They are: Audible sound, infrasonic sound and Ultrasonic sound.

30. What is the range of audible sound?

a) Below 20Hz

b) 20Hz to 20000 Hz

c) Above 20000 Hz

d) 2Hz to 200000Hz

Explanation

Audible sound: Sound with frequency ranging from 20 Hz to 20000 Hz is called sonic sound or audible sound. These sounds can be heard by the human beings only. Human ears cannot hear sounds with frequencies below 20 Hz or above 20000 Hz. So, the above range is called as audible range of sound.

31. Which of these are not true regarding the subsonic sound?

a) Humans cannot hear this frequency sounds.

b) It is also called as infrasonic sound.

c) Dogs and dolphins can hear the subsonic sound.

d) All the sounds above 20Hz are called as subsonic sound.

Explanation

A sound with a frequency below 20 Hz is called as subsonic or infrasonic sound. Humans cannot hear the sound of this frequency, but some animals like dog, dolphin, etc., can hear.

32. What are the uses of the infrasonic sounds?

a) Monitoring earthquakes and volcanoes.

b) Identifying petroleum and rocks below the earth surface.

c) Studying human heart mechanism.

d) All the above

Explanation

Uses of infrasonic sound are given below. It is employed in the Earth monitoring system. It is also used in the study of the mechanism of the human heart.

33. Which of this animal cannot hear the ultrasonic sound?

a) Bat

b) Dolphin

c) Cat

d) Dog

Explanation

A sound with a frequency greater than 20000 Hz is called as ultrasonic sound. Animals such as bats, dogs, dolphins, etc., are able to hear certain ultrasonic sounds as well.

34. What are the uses of the ultrasonic sounds?
a) Sonogram
b) Dish washers
c) Detect submarines and depth of sea.
d) All the above
Explanation
Some of the uses of ultrasonic sounds are given below.
• It is extensively used in medical applications like 'sonogram'.
• It is used in the SONAR system to detect the depth of the sea and to detect enemy submarines.
• It is also employed in dish washers.

35. Choose the correct statements.
i) Galton's whistle is used to train dogs for investigations.
ii) The Galton's whistle is audible to human ears too.
a) i only
b) ii only
c) Both i and ii
d) Neither i nor ii
Explanation
Another important application of ultra sound is the Galton's whistle. This whistle is inaudible to the human ear, but it can be heard by the dogs. It is used to train the dogs for investigation.

36. Which of these are statements are not true?
a) Bats produce ultrasonic sound while screaming.
b) Bats can hear sounds of frequencies higher than 20000 Hz.
c) Bats communicate with animals by the ultrasonic waves.
d) Bats use the ultrasonic waves to locate their way and prey.
Explanation
A bat can hear the sounds of frequencies higher than 20,000 Hz. Bats produce ultrasonic sound during screaming. These ultrasonic waves help them to locate their way and the prey.

37. Music is,
i) Pleasing sensation sounds.
ii) May be ultrasonic sound waves.
iii) Periodic vibrations of random motion.
iv) Regular pattern of vibrations.
a) i, iii, iv only

b) i, iii only
c) i, iv only
d) ii, iii, iv only
Explanation
Some sounds are pleasing to the ear and make you happy. The sound that provides a pleasing sensation to the ear is called 'music'. Music is produced by the regular patterns of vibrations.

38. Which of these is not categorized as a musical instrument?
a) Wind instrument
b) Ultrasonic instrument
c) Reed instrument
d) Percussion instrument
Explanation
Musical instruments are categorized into four types as given below.
• Wind instruments
• Reed instruments
• Stringed instruments
• Percussion instruments

39. Assertion (A): The sound in wind instruments is produced by the vibration of air in a hollow tube.
Reasoning (R): The frequency of the sound in wind instruments is varied by changing the length of vibrating air column.
a) Both A and R is True and R is the correct explanation of A.
b) Both A and R is True but R is not the correct explanation of A.
c) A is True but R is False.
d) Both A and R is False.
Explanation
In a wind instrument the sound is produced by the vibration of air in a hollow tube. The frequency is varied by changing the length of the vibrating air column. Trumpet, Flute, Shehnai and Saxophone are some well-known wind instruments.

40. Which of these are the examples of reed instruments?
a) Harmonium
b) Mouth Organ
c) Clarinet
d) All the above
Explanation

A reed instrument contains a reed. Air which is blown through the instrument causes the reed to vibrate, which in turn produces the specific sound. Examples of reed instruments include Harmonium and Mouth Organ.

41. Choose the correct statements regarding the stringed instruments.
i) A string of wire is used to produce vibrations and the specific sound.
ii) Hollow boxes are incorporated to amplify the produced sound.
iii) Frequency of sound is varied by varying the length of vibrating wire.
a) i only
b) ii only
c) iii only
d) All the above
Explanation
Stringed instruments make use of a string or wire to produce vibrations and hence the specific sound. These instruments also have hollow boxes that amplify the sound that is produced. The frequency of sound is varied by varying the length of the vibrating wire. Violin, Guitar, Sitar are some of the examples of stringed instruments.

42. Which of these factors decides the natural frequency of an instrument?
a) Tension of the string
b) Linear density of the string
c) Length of the string
d) All the above
Explanation
A guitar string has a number of frequencies at which it will naturally vibrate. These natural frequencies are known as the harmonics of the guitar string. The natural frequency, at which an object vibrates, depends upon the tension of the string, the linear density of the string and the length of the string.

43. Which of these are not involved in the percussion instruments?
a) Resonator
b) Membranes
c) Strings
d) Beater
Explanation
There are varieties of percussion instruments all over the world. Percussion instruments like the drum and tabla consist of a leather membrane, which is stretched across a hollow box called the resonator. When a membrane is hit, it starts vibrating and produces the sound.

44. Which is considered as the oldest musical instrument?

a) Percussion instruments
b) Wind instruments
c) Reed instruments
d) Stringed instruments
Explanation
Percussion instruments produce a specific sound when they are struck scrapped or clashed together. They are the oldest type of musical instruments.

45. Which of these human parts are involved in producing the sound?
a) Larynx
b) Voice box
c) Vocal cords
d) All the above
Explanation
In a human being the sound is produced in the voice box, called the larynx, which is present in the throat. It is located at the upper end of the windpipe.

46. How many ligaments are present in the human larynx?
a) 2
b) 3
c) 1
d) 4
Explanation
The larynx has two ligaments called 'vocal cords', stretched across it. The vocal cords have a narrow slit through which air is blown in and out.

47. Assertion (A): In human the air passes through the slit in the vocal cords vibrate and produces sound.
Reasoning (R): The air from the lungs is pushed up through the trachea then to the larynx.
a) Both A and R is True and R is the correct explanation of A.
b) Both A and R is True but R is not the correct explanation of A.
c) A is True but R is False.
d) Both A and R is False.
Explanation
When a person speaks, the air from the lungs is pushed up through the trachea to the larynx. When this air passes through the slit, the vocal cords begin to vibrate and produce a sound.

48. Which of this variation produces different pitch sounds?
a) Thickness of vocal cords
b) Lungs capacity

c) Air intake
d) Heart rate
Explanation
By varying the thickness of the vocal cords, the length of the air column in the slit can be changed. This produces sounds of different pitches.

49. Which of this feature is not related to male voice and sound quality?
a) Thicker vocal cords
b) Short vocal cords
c) Deep pitch
d) Low pitch sound
Explanation
Male generally have thicker and longer vocal cords that produce a deeper, low pitch sound in comparison with females.

50. Assertion (A): The ear is an important organ for all animals to hear sound.
Reasoning (R): The Human ear picks up and interprets high frequency vibrations of air.
a) Both A and R is True and R is the correct explanation of A.
b) Both A and R is True but R is not the correct explanation of A.
c) A is True but R is False.
d) Both A and R is False.
Explanation
The ear is the important organ for all animals to hear a sound. We are able to hear sound through our ears. The human ear picks up and interprets high frequency vibrations of air.

51. Which of these frequency vibrations are heard by aquatic animals?
a) VHF
b) HF
c) UHF
d) LF
Explanation
Ears of aquatic animals are designed to pick up high frequency vibrations in water.

52. Name the visible part of human ear?
a) Canal
b) Pinna
c) Drum
d) Membrane
Explanation

The outer and visible part of the human ear is called pinna (curved in shape). It is specially designed to gather sound from the environment which then reaches the ear drum (tympanic membrane) through the ear canal.

53. Which of these creates the vibrations in human ear?
a) Ossicles
b) Nerves
c) Drum
d) Cells
Explanation
When the sound wave strikes the drum, the ossicles move inward and outward to create the vibrations. These vibrations are then picked up by special types of cells in the inner ear. From the inner ear the vibrations are sent to the brain in the form of signals. The brain perceives these signals as sounds.

54. Assertion (A): Noise is created by the irregular and non-periodic vibrations.
Reasoning (R): Noises are unwanted, irritating and unpleasant louder sounds.
a) Both A and R is True and R is the correct explanation of A.
b) Both A and R is True but R is not the correct explanation of A.
c) A is True but R is False.
d) Both A and R is False.
Explanation
Any sound that is unpleasant to the ear is called noise. It is the unwanted, irritating and louder sound. Noise is produced by the irregular and non-periodic vibrations.

55. Which of these causes noise pollution?
a) Busy roads
b) Electrical appliances
c) Loudspeakers
d) All the above
Explanation
Noise gives you stress. The disturbance produced in the environment by loud and harsh sounds from various sources is known as noise pollution. Busy roads, airplanes, electrical appliances such as mixer grinder, washing machine and un-tuned radio cause noise pollution. Use of loudspeakers and crackers during the festivals also contributes to the noise pollution.

56. Which of the following is the major source of the noise pollution?
a) Industries
b) Loudspeakers
c) Busy traffic

d) Un-tuned radios

Explanation

The major source of noise pollution is from the industries. Noise pollution is the bi-product of industrialization, urbanization and modern civilization.

57. What are the health hazards for humans due to noise pollution?

a) Change in sleeping pattern.

b) Stress, nervousness and Headache.

c) Lack of concentration

d) All the above

Explanation

Noise creates some health hazards. Some of them are listed below.

- Noise may cause irritation, stress, nervousness and headache.
- Long term exposure to noise may change the sleeping pattern of a person.
- Sustained exposure to noise may affect hearing ability. Sometimes, it leads to loss of hearing.
- Sudden exposure to louder noise may cause a heart attack and unconsciousness.
- It causes lack of concentration in one's work. Noise of horns, loud speakers cause disturbances leading to lack of concentration.
- Noise pollution affects a person's peace of mind. It adds to the existing tensions of modern living. These tensions results in disease like high blood pressure or short tempered nature.

58. State some of the methods to reduce noise pollution.

a) Effective silencers in automobiles.

b) Usage of low volume communication systems.

c) Proper maintenance of industrial machines.

d) All the above

Explanation

Noise pollution can be significantly reduced by adopting the following steps.

- Strict guidelines should be set for the use of loudspeakers on social, religious and political occasions.
- All automobiles should have effective silencers.
- People should be encouraged to refrain from excessive honking while driving.
- Industrial machines and home appliances should be properly maintained.
- All communication systems must be operated in low volumes.
- Residential areas should be free from heavy vehicles.
- Green corridor belt should be set up around the industries as per the regulations of the pollution control board.
- People working in noisy factories should wear ear plugs.
- People should be encouraged to plant trees and use absorbing materials like curtains and cushions in their home.

59. Which is not a symptom of hearing loss?
a) Ear ache
b) Low blood pressure
c) Ringing in ears
d) Fullness in ear
Explanation
The following are the symptoms of hearing loss, Ear ache, A feeling of fullness or fluid in the ear and Ringing in your ear.

60. What are the reasons for hearing loss?
a) Medicines
b) Genetic disorder
c) Loud noise
d) All the above
Explanation
Hearing loss is caused by various reasons. Some of them are Aging, Ear infections if not treated, certain medicines, Genetic disorders, a severe blow to the head and loud noise.