CBT IX SCIENCE DECEMBER

Q1 Sound waves are

(a) Waves in which particles vibrate perpendicular to the direction of wave propagation

(b) Waves in which particles vibrate parallel to the direction of wave propagation

(c) Waves in which particles vibrate neither perpendicular nor parallel to the direction of wave propagation

(d) None of these

Answer- (b) Waves in which particles vibrate parallel to the direction of wave propagation

Feedback-The wave in which the particles of the medium oscillate parallel to the direction of propagation of the wave is called a longitudinal wave. Sound waves similarly oscillate parallel to the direction of propagation, forming the compressions and rarefactions. Hence sound waves are called longitudinal waves.

Q2 When we change feeble sound to loud sound we increase its

(a) Frequency
(b) Amplitude
(c) Velocity
(d) Wavelength

Answer- (b) Amplitude

Feedback- The amplitude (height) of the sound wave defines how loud the sound is. Hence amplitude and loudness are directly proportional. When we change feeble sound to loud sound we increase its amplitude.

Q3 While designing an auditorium, an engineer uses which of following points?

(i)   Makes concave back stages

(ii)   Uses sound absorbing materials

(iii)   Reduces reverberation time

(iv) Increases echo
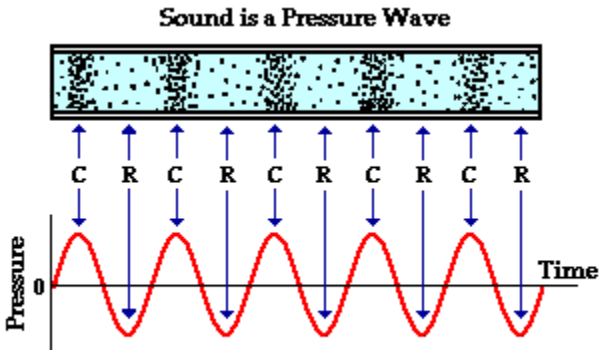
(a) (i) and (iii) only
(b) (i) , (ii) , (iii) and (iv)
(c) (i) , (ii) and (iii) only
(i) and (ii) only

Answer- (c) (i) , (ii) and (iii) only

(b) (i) , (ii) , (iii) and

Q4 Distance between a compression and next rarefaction in a sound wave is

(a) One Wavelength
(b) Half Wavelength
(c) Twice Wavelength
(d) One Fourth Wavelength

Sound is a Pressure Wave

NOTE: "C" stands for compression and "R" stands for rarefaction

Answer- (b) half wavelength

Feedback-
The distance between two consecutive compressions or rarefactions is called wavelength. It is denoted by symbol λ. Thus, the distance between a compression and the next rarefaction will be λ/2

Q5 The instruments Megaphone, stethoscope, hearing aids and sound boards work on the principle of-

   (a) Reverberation
   (b) Reflection
   (c) Persistence
   (d) Absorption

Answer- (b) Reflection
Feedback
The principle on which the instruments Megaphone, Stethoscope, Hearing aids, and Sound boards work is reflection.

Q6 Infrasonic (fi), audible (fa), ultrasound (fu) frequencies of sound are related as-

(a) fi <fa <fu
(b) fa <fi <fu
(c) fi >fa >fu
(d) fa <fu <fi

Answer- (a) fi <fa <fu

Q7 Assertion (A): Human Ear converts pressure variations in air with audible frequencies into electric signals.
Reason (R): Audible sound lies in the range of 20 Hz to 2000Hz.
(a) Both (A) and (R) are true and (R) is the correct explanation of (A)
(b) Both (A) and (R) are true and (R) is not the correct explanation of (A)
(c) (A) is true but (R) is false
(d) (A) is false but (R) is true.
Answer- (c) (A) is true but (R) is false

Q8 Lata while visiting London attended an opera performance. its architecture and furnishings appealed to her. The draperies, cushions and curtains on the curved ceilings were all arranged correctly. Behind the stage, she noticed a sound board. She was now curious as to whether each of these decorations were placed for the benefit of the hall aesthetics or for a scientific cause.

In an opera house, what are the functions of curtains, pillows and draperies.
(a) To absorb sound
(b) To produce echo
(c) To reflect sound
(d) Both (c) and (d)

Answer- (a) To absorb sound
Feedback
The repeated multiple reflections of sound in any big enclosed space is known as reverberation. The reverberation can be reduced by covering the ceiling and walls of the enclosed space with sound absorbing materials, such as fibre board, loose woolens, etc.
All furnishing materials are used in halls and auditorium to absorb sound.

Q9 Sneha clapped her hand near a cliff and heard the echo after 4s. What is the distance between Sneha and cliff ? (Speed of sound = 346m/s)
(a) 1384m
(b) 692m
(c) 2768m
(d) None of these.
Answer- (b) 692m
Feedback
  Time taken by sound to reach the cliff = 4/2=2s
Distance=346*2 = 692m

Q10 To hear a distinct echo sound, the time interval between original and reflected sound must be atleast

(a) 17.2s
(b)2/10s

(c)0.1s
(d) 1s

Answer- (C) 0.1S