Examples and Quizs

Waves

1- When a compression is incident on rigid wall it is reflected as

(a) Compression with a phase change of π

(b) Compression with no phase change

(c) Rarefaction with a phase change of π

(d) Rarefaction with no phase change

- Sol:
- Answer: (a)

2- Loudness of a note of sound is :

(a) Directly proportional to amplitude of the wave

(b) Directly proportional to square of amplitude of wave

(c) Directly proportional to velocity of the wave

(d) Directly proportional to square of velocity of the wave

- Answer: (b)

3 - If the amplitude of sound is doubled and the frequency reduced to one-fourth, the intensity of sound at the same point will be

(a) Increasing by a factor of 2 ,

(b) Decreasing by a factor of 2 ,

(c) Decreasing by a factor of 4 ,

(d) Unchanged

- Answer: (c)

4- The velocity of sound in any gas depends upon:

(a) Wavelength of sound only ,

(b) Density and elasticity of gas ,

(c) Intensity of sound waves only

(d) Amplitude and frequency of sound

- Answer: (b)

5- Ultrasonic waves are those waves:

(a) To which man can hear ,

(b) Man can not hear ,

(c) Are of high velocity

(d) Of high amplitude

- Answer: (b)

6-In the longitudinal waves the direction of vibration in medium of particle is

(a) Perpendicular to propagation of wave

(b) Parallel to propagation

(c) Different from each other

(d) Variable for time to time.

- Answer: (b)

8- To demonstrate the phenomenon of beats we need

(a) Two sources which emit radiation of nearly the same frequency

(b) Two sources which emit radiation of exactly the same frequency

(c) Two sources which emit radiation of exactly the same frequency and have a definite phase relationship

(d) Two sources which emit radiation of exactly the same wavelength

- Answer: (a)

10- When a source is going away from a stationary observer, with a velocity equal to that of sound in air, then the frequency heard by the observer will be

(a) Same , (b) Half ,

(c) Double , (d) One third

- Answer: (b)

11- A wave travels in a medium according to the equation of displacement given by

$y(x,t) = 0.03 \sin \pi(2t - 0.01x)$,

where y and x are in meters and 't' is seconds. The wavelength of the wave is

(a) 200 m , (b) 100 m

(c) 20 m , (d) 10 m

- Answer: (a)

14- Beats are produced when two sound waves given by

$y_1 = A \sin 200 \pi t$ and $y_2 = A \sin 210 \pi t$ are sounded together. How many beats are produced/sec?

(a) 3

(b) 4

(c) 5

(d) 6

- Answer: (c)

15- Doppler effect is applicable for

(a) Sound wave

(b) Light waves

(c) None of above

(d) Both ‘a’ and ‘b’

- Answer: (d)

16- There are some points on a standing wave that never move. What are these points called?

(a) Harmonics

b) Normal Modes

c) Nodes

d) Antinode e)Interference

Ans: c) Nodes

17- Beats are produced by the superposition of two harmonic waves only if their frequencies are equal but their amplitudes differ slightly.

a) True b) False

Answer: b) False

18 - On a standing-wave pattern, the distance between two consecutive nodes is *d*. The wavelength is

a)*d*/2 b)*d* c)3*d*/2 d)2*d* e) 4*d*

Ans: d)<u>2*d*</u>

19 - The frequency of the third harmonic of a string is

a) one-third the frequency of the fundamental.
b) equal to the frequency of the fundamental.
c) three times the frequency of the fundamental.
d) nine times the frequency of the fundamental.

Ans: (c) three times the frequency of the fundamental.

20 - When a wave travels through a medium _____.

a) particles are transferred from one place to another

b) energy is transferred in a periodic manner

c) energy is transferred at a constant speed

d) none of the above statements is applicable

Ans: c) energy is transferred at a constant speed

21- Standing waves result from the superposition of two waves of :

A- the same amplitude and frequency and opposite directions of propagation.

B- the same amplitude, frequency, and direction of propagation

C- the same amplitude, slightly different frequency, and the same direction of propagation

•A- the same amplitude and frequency and opposite directions of propagation.

22- When the tension on a piano wire is increased, which of the following occurs?

A- Its wavelength and frequency increase

B- Its wavelength remains the same while its frequency increases

C- Its wavelength decreases.

<u>A- Its wavelength and frequency increase</u>