LEVEL # 1

Questions based on Classification of waves

Q.1 The property of a medium necessary for wave propagation is -
(A) Its inertia (B) Its elasticity
(C) Its low resistance (D) All of above

Q.2 Water waves are -
(A) Transverse
(B) Longitudinal
(C) Combination of longitudinal and transverse wave
(D) Neither transverse nor longitudinal

Q.3 By which of the following waves, energy is not carried ?
(A) stationary waves
(B) longitudinal progressive waves
(C) transverse progressive waves
(D) electromagnetic waves

Q.4 Which of the following are longitudinal waves ?
(A) sound waves
(B) radio waves
(C) infrared waves
(D) electromagnetic waves.

Q.5 In stationary waves, energy is –
(A) transferred
(B) not transferred
(C) zero at every point
(D) transferred in the direction of propagation of waves.

Q.6 The wavelength of sound wave in a gas is -
(A) The distance between compression and rarefaction propagating in the medium.
(B) The distance travelled by the wave in one second.
(C) The distance between two consecutive particles of the medium oscillating in the same phase.
(D) None of these

Q.7 The propagation of sound waves is not possible through
(A) Solids (B) Gases
(C) Vacuum (D) Liquids

Questions based on Basic parameters related to waves

Q.8 The amplitude of a wave represented by displacement equation :

$y = \frac{1}{\sqrt{a}} \sin \omega t \pm \frac{1}{\sqrt{b}} \cos \omega t$ will be -

(A) $\frac{a+b}{ab}$ (B) $\frac{\sqrt{a}+\sqrt{b}}{ab}$

(C) $\frac{\sqrt{a} \pm \sqrt{b}}{ab}$ (D) $\sqrt{\frac{a+b}{ab}}$

Q.9 The relation between the particles velocity and wave velocity is -

(A) $u = -v \frac{dy}{dx}$ (B) $u = \frac{V}{\left(\frac{dy}{dx}\right)}$

(C) $u = V$ (D) $u = V + \frac{dy}{dx}$

Q.10 Which of the following is not a formula of wave velocity ?

(A) $V = \frac{\omega}{K}$ (B) $V = n\lambda$

(C) $V = \frac{2\pi}{TK}$ (D) $V = \frac{K}{\omega}$

Q.11 The time taken by a particle in reaching from trough to crest in a transverse wave is -

(A) $\frac{T}{4}$ (B) $\frac{T}{2}$ (C) $\frac{3T}{4}$ (D) T

Q.12 A sine wave has amplitude A and wavelength λ. If V is the wave velocity and v be the maximum particle velocity, then-

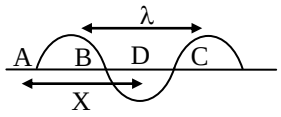
(A) V = v if $A = \frac{\lambda}{2\pi}$

(B) V = v if $A = 2\pi\lambda$

(C) V = v if A = $\pi\lambda$

(D) V can never be equal to v.

Q.13 In the diagram, the phase difference between points A and D is -



(A) $\frac{\pi}{\lambda}X$ (B) $\frac{2\pi}{\lambda}X$

(C) $\frac{\pi}{2\lambda}X$ (D) $\frac{\pi\lambda}{X}$

Q.14 If the energy density and velocity of a wave are u and c respectively then the energy propagating per second per unit area will be -

(A) uc (B) $\frac{c}{u}$

(C) $\frac{u}{c}$ (D) $c^2 u$

Q.15 The velocity of a wave propagating along a stretched string is 10 m/s and its frequency is 100 Hz. The phase difference between the particles situated at a distance of 2.5 cm on the string will be -

(A) $\pi/8$ (B) $\pi/4$

(C) $3\pi/8$ (D) $\pi/2$

Q.16 Two points lie on a ray are emerging from a source of simple harmonic wave having period 0.040. The wave speed is 300 m/s and points are at 10 m and 16 m from the source. They differ in phase by:

(A) π (B) $\pi/2$

(C) 0 or 2π (D) none of these

Q.17 If the frequency of a wave is 100 Hz then the particles of the medium cross the mean position in one second -

(A) 100 times (B) 200 times

(C) 400 times (D) 50 times

Q.18 The velocity of sound in sea water is 1530 m/s. If a sound of frequency 1800 Hz is produced in sea water, then its wavelength will be –

(A) 0.18 m (B) 5.45 m

(C) 0.85 m (D) 1.18 m

Q.19 When a sound wave of frequency 300 Hz passes through a medium, the maximum displacement of a particle of the medium is 0.1 cm. The maximum velocity of the particle is equal to :

(A) 60 π cm/sec (B) 30 π cm/sec

(C) 30 cm/sec (D) 60 cm /sec

Q.20 The relation between frequency n, wavelength λ and velocity of propagation v of the wave is –

(A) $n = v\lambda$ (B) $n = \lambda/v$

(C) $n = 1/v$ (D) $n = v/\lambda$

Q.21 If the frequency of a sound wave is increased by 25% then the change in its wavelength will be -

(A) 25% Decrease (B) 20% Decrease

(C) 20% Increase (D) 10% Increase

Q.22 Two sound waves are represented by the following equations :

$y_1 = 10 \sin(3\pi t - 0.03x)$ and

$y_2 = 5\{\sin(3\pi t - 0.03x) + \sqrt{3}\cos(3\pi t - 0.03x)\}$

Then the ratio of their amplitudes is given by -

(A) 1 : 1 (B) 1 : 2

(C) 2 : 1 (D) 2 : 5

Q.23 The displacement y of a particle executing periodic motion is given by $y = 4\cos^2(t)\sin(1000\,t)$. This expression may be considered to be a result of the superposition of waves :

(A) Two (B) Three

(C) Four (D) Five

Q.24 The displacement of the medium in a sound wave is given by the equation $y_1 = A\cos(ax + bt)$ Where A, a and b are positive constants. Then the wavelength and frequency of the incident wave are –

(A) a, b (B) 2π a , 2π b

(C) $\frac{2\pi}{a}, \frac{2\pi}{b}$ (D) $\frac{2\pi}{a}, \frac{b}{2\pi}$

Questions based on **Progressive wave equation**

Q.25 The equation of a progressive wave moving in +ve X-direction is given by -

(A) $Y = A \sin 2\pi \left(\frac{Vt}{\lambda} - X\right)$

(B) $Y = A \sin \frac{2\pi}{\lambda}\left(Vt - \frac{X}{\lambda}\right)$

(C) $Y = A \sin \frac{2\pi}{\lambda}(Vt - X)$

(D) $Y = A \sin \frac{2\pi}{\lambda}(X + Vt)$

Q.26 Which of the following equation does not represent the progressive wave -

(A) $y = A \sin \omega\left(t - \frac{x}{v}\right)$

(B) $y = A \sin 2\pi\left(\frac{t}{T} + \frac{x}{\lambda}\right)$

(C) $y = A \sin \frac{2\pi}{\lambda}(vt - x)$

(D) $y = A \sin 2\pi\left(\frac{t}{T} - \frac{x}{v}\right)$

Q.27 Which of the following is not the equation of a plane progressive wave -

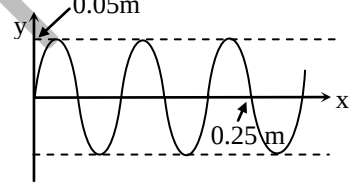
(A) $y = a \sin(\omega t \pm kx)$

(B) $y = a \sin \frac{2\pi}{\lambda}[Vt \pm x]$

(C) $y = a \sin 2\pi\left[\frac{t}{T} \pm \frac{x}{\lambda}\right]$

(D) $y = 2a \sin Kx \cos \omega t$

Q.28 If the speed of the wave shown in the figure is 330 m/s in the given medium, then the equation of the wave propagating in the positive x-direction will be –



(all quantities are in MKS units)

(A) $y = 0.05 \sin 2\pi (4000\, t - 12.5\, x)$

(B) $y = 0.05 \sin 2\pi (4000\, t - 122.5\, x)$

(C) $y = 0.05 \sin 2\pi (3300\, t - 10\, x)$

(D) $y = 0.05 \sin 2\pi (3300\, x - 10\, t)$

Q.29 The equation of the a progressive wave is $y = a \sin\left[\frac{\pi}{2}x - 200\pi t\right]$. The frequency of the wave will be -

(A) 0.1 Hz (B) 25 Hz

(C)100 Hz (D) 200 Hz

Q.30 The equation of a transverse wave, out of the following is -

(A) X = a sin (Kx – ωt) (B) Y = a sin (Ky – ωt)

(C) Y = a sin (Kx – ωt) (D) Z = a cos (Kz – ωt)

Q.31 The equation of a transverse wave is given by $y = 10 \sin \pi (0.01x - 2.0t)$, where y and x are in cm and t is in second. The frequency of the wave will be -

(A) 1Hz (B) 2 Hz (C) 3 Hz (D) 4 Hz

Q.32 In the equation of motion of a particle $y = 0.5 \sin(0.3t + 0.1)$, the initial phase of motion is -

(A) 0.1 (B) 0.3t

(C) 0.3 (D) (0.3t + 0.1)

Q.33 The equation for stationary wave is $y = 0.005 \cos\left(62.8t + 3.14x + \frac{\pi}{3}\right)$ its periodic time T and wavelength λ are -

(A) 3.14 sec, 1m (B) 1 sec, 1 m

(C) 0.1 sec, 2m (D) 0.1 sec, 1m

Q.34 The equation of a progressive wave is $y = 8 \sin \pi (.02\, x - 4t)$. If the x and y are expressed in cm and time in seconds, the value of wavelength and the periodic time will be -

(A) 50cm, 25 sec (B) 0.02 cm, 4 sec

(C) 100 cm, 0.5 sec (D) None of these

Q.35 The displacement produced by a simple harmonic wave is :

$y = \frac{10}{\pi} \sin\left[2000\pi t - \frac{\pi x}{17}\right]$ cm. The time period and maximum velocity of the particle will be respectively -

(A) 10^{-3} second and 200 m/s

(B) 10^{-2} second and 2000 m/s

(C) 10^{-3} second and 330 m/s

(D) 10^{-4} second and 20 m/s

Q.36 Equation of a progressive wave is given by = 0.2 cos $\pi\left(.04t+.02x-\frac{\pi}{6}\right)$. The distance is expressed in cm and time in second. What will be the minimum distance between two particles having the phase difference of $\pi/2$?

(A) 4 cm (B) 8 cm
(C) 25 cm (D) 12.5 cm

Q.37 A progressive wave is represented by $y = 0.1 \sin \frac{8\pi}{7}\left(0.1t-\frac{x}{20}\right)$. Where all the observations are in MKS system. The wave velocity will be -

(A) 2m/sec (B) 15 m/sec
(C) 20 m/sec (D) 40 m/sec

Q.38 The equation of a transverse waves is given by $y = 10 \sin\pi (0.01 x – 2.0t)$, where y and x are in cm and t is in second. The frequency of the wave will be -

(A) 1 Hz (B) 2Hz
(C) 3 Hz (D) 4 Hz

Q.39 A transverse wave, whose amplitude is 0.5 m wavelength is 1 m and frequency is 2Hz. is travelling along positive x direction. The equation of this wave will be-

(A) $y = 0.5 \cos (2\pi x – 4\pi t)$
(B) $y = 0.5 \cos (2\pi x + 4\pi t)$
(C) $y = 0.5 \sin (\pi x – 2\pi t)$
(D) $y = 0.5 \cos (2\pi x + 2\pi t)$

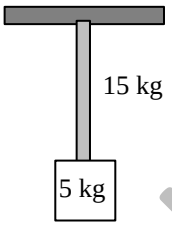
Q.40 The correct equation of one dimensional wave is -

(A) $\frac{d^2y}{dx^2} = \frac{1}{V^2}\frac{d^2y}{dt^2}$ (B) $\frac{d^2y}{dx^2} = V^2 \frac{d^2y}{dt^2}$

(C) $\frac{d^2y}{dx^2} = \frac{1}{V}\frac{d^2y}{dt^2}$ (D) $\frac{d^2y}{dx^2} = V \frac{d^2y}{dt^2}$

Questions based on Transverse wave velocity

Q.41 A uniform rope of length 10 m and mass 15 kg hangs vertically from a rigid support. A block of mass 5 kg is attached to the free end of the rope. A transverse pulse of wavelength 0.08 m is produced at the lower end of the rope. The wavelength of the pulse when it reaches the top of the rope will be-



(A) 0.08 m (B) 0.04 m
(C) 0.16 m (D) 0 m

Q.42 The density of the material of a wire used in sonometer is 7.5×10^3 kg/m^3. If the stress on the wire is 3.0×10^8 N /m^2, the speed of transverse wave in the wire will be -

(A) 100 m/s (B) 200 m/s
(C) 300 m/s (D) 400 m/s

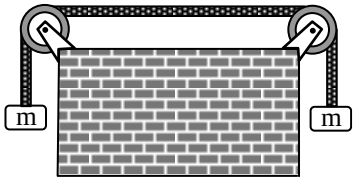
Q.43 When a body of mass 25Kg is suspended from a sonometer wire then it vibrates with frequency 200 Hz. If the volume of the body is 0.009 m^3 and it is immersed in water then the frequency of vibration of the wire will be -

(A) 220 Hz (B) 160 Hz
(C) 240 Hz (D) 180 Hz

Q.44 The length, mass and tension of a string are 1000 cm, 0.01 Kg and 10 N respectively. The speed of transverse waves in the string will be -

(A) 10^2 m/s (B) 10^4 m/s
(C) 10^6 m/s (D) None of these

Q.45 In the given arrangement, if hanging mass will be changed by 4%, then percentage change in the wave speed in string will be:



(A) 2% (B) 8%
(C) 3% (D) 4%

Questions based on Superposition principle

Q.46 When waves are superposed. Which of the following properties of wave is not changed ?
(A) Frequency (B) Energy density
(C) Velocity (D) Total energy

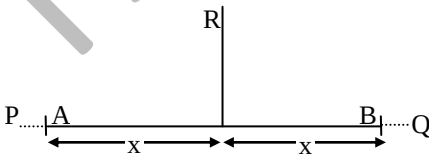
Q.47 If the amplitude of two sound waves is a_1 and a_2, then on superposition the resultant amplitude will be -
(A) $(a_1 + a_2)$ only
(B) $(a_1 - a_2)$ only
(C) $(a_1 + a_2)$ or $(a_1 - a_2)$
(D) $\sqrt{a_1^2 + a_2^2 + 2a_1a_2\cos\theta}$
(θ = phase difference between two waves)

Questions based on Interference

Q.48 Two sound wave of equal intensity I superimpose at point P in the same phase. The resultant intensity at point P will be -
(A) I (B) 2I (C) $\sqrt{2}$ I (D) 4I

Q.49 The resultant amplitude, when two waves of same frequency but with amplitudes a_1 and a_2 superimpose at phase difference of $\frac{\pi}{2}$, will be -
(A) $a_1 + a_2$ (B) $a_1 - a_2$
(C) $\sqrt{a_1^2 + a_2^2}$ (D) $a_1^2 + a_2^2$

Q.50 The frequencies of sources A and B as shown in figure are same. The nature of interference at points P, Q and R will be if AB = $\frac{\lambda}{2}$ and the two sources are in same phase.



(A) constructive at P. destructive at Q and R.
(B) constructive at P and R. destructive at Q.
(C) constructive at P and Q. destructive at R.
(D) constructive at R. destructive at P and Q

Q.51 Two waves of same frequency but of amplitudes a and 2a respectively superimpose over each other. The intensity at a point where the phase difference is $\frac{3\pi}{2}$, will be
(A) $9a^2$ (B) $3a^2$ (C) a (D) $5a^2$

Q.52 Two waves of same frequency and of intensity I_0 and $9I_0$ produces interference. If at a certain point the resultant intensity is $7I_0$ then the minimum phase difference between the two sound waves will be-
(A) 90º (B) 100º (C) 120º (D) 110º

Q.53 If the ratio of amplitudes of two waves at any point in the medium is 1:3, then the ratio of maximum and minimum intensities due to their superposition will be -
(A) 2 : 3 (B) 3 :1 (C) 2 : 1 (D) 4 : 1

Q.54 Two periodic waves of amplitudes A_1 and A_2 pass through a region, If $A_1 > A_2$, the difference in the maximum and minimum possible amplitudes will be-
(A) $A_1 - A_2$ (B) $A_1 + A_2$
(C) $2A_1$ (D) $2A_2$

Q.55 The ratio of sound intensities of two waves of the same frequency is 1 : 16. Then the ratio of the amplitudes will be -
(A) 1 : 2 (B) 1 : 4 (C) 1 : 8 (D) 1 : 16

Q.56 If two waves are represented by :
$y_1 = 2\sin(4x - 300t)$ & $y_2 = \sin(4x - 300t - 0.2)$
then their superposed wave will have angular frequency -
(A) 150/π (B) 150 π
(C) 300 (D) 600 π

Q.57 Two waves of intensities I and 4I produce interference. Then the intensity at constructive and destructive interference respectively is –
(A) 3I, 5I (B) 5I, 3I
(C) I, 9I (D) 9I, I

Q.58 When two trains of the same frequency and same amplitude 'a' are superposed in phase, the resulting intensity at the point of superposition is proportional to –

(A) $4a^2$ (B) $2a^2$ (C) 2a (D) 0

Q.59 Two sources of intensities I and 4I and waves, which interfere to produce a resultant intensity I_0 at a point of phase difference $\pi/2$. I_0 is equal-

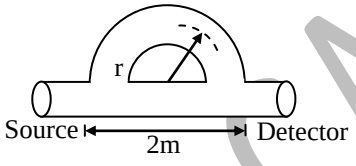
(A) 5I (B) 4I (C) 3I (D) I

Q.60 Two waves of same frequency and same amplitude reach a common point of the medium simultaneously. If the amplitude of resultant wave is zero then the path difference between the waves will be –

(A) λ (B) $\lambda/2$

(C) 2λ (D) $\frac{3\lambda}{4}$

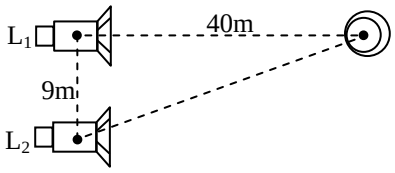
Q.61 A tuning fork of frequency 250 Hz is vibrating at one end of a tube as shown in figure. If maximum sound is heard at the other end, the velocity of wave will be –



(A) 285 m/s (B) 280 m/s

(C) 180 m/s (D) 320 m/s

Q.62 Two loudspeakers L_1 and L_2 driven by a common oscillator and amplifier are set up as shown in figure. As the frequency of the oscillator increases from zero, the detector at D recorded a series of maximum and minimum signals. What is the frequency at which the first maximum is observed. (Speed of sound = 330 m/s)



(A) 165Hz (B) 330Hz

(C) 495Hz (D) 660Hz

Questions based on **Stationary waves**

Q.63 Two waves travelling in mutually opposite direction in a medium superimpose over each other, then which event is observed -

(A) Beats (B) Resonance

(C) Stationary waves (D) Harmonic nodes

Q.64 If the displacement of the particles in a string stretched along X - direction is y, then the expression representing the stationary wave in it is

(A) $K^2 x^2 - \omega^2 t^2$

(B) cos K x sin ω t

(C) cos ($K^2 x^2 - \omega^2 t^2$)

(D) cos ($K^2 x^2 + \omega^2 t^2$)

Q.65 Out of the following which equation represents a stationary wave ?

(A) $y = ae^{-bx} \sin(\omega t - Kx + x)$

(B) $y = (ax + b) \times \sin(\omega t - Kx)$

(C) $y = a \sin Kx \sin(\omega t + x)$

(D) $y = a \sin(\omega t - Kx)$

Q.66 A stationary wave is represented by -

(A) $Y = 2A \cos Kx \sin \omega t$.

(B) $Y = 2A \sin K(x - Vt) \sin \omega t$

(C) $Y = 2A \cos Kx \cos(\omega t - Kx)$

(D) $Y = 2A \cos K(X - Vt) \cos \omega t$

Q.67 When a plane progressive wave superposes with another plane progressive wave reflected by a denser medium then the equation of resulting stationary wave will be -

(A) y = 2a sin Kx cos ω t

(B) y = 2a cos K x cos ω t

(C) y = 2a sin Kx sin ω t

(D) y = 2a cos Kx sin ω t

Q.68 The following equations represent progressive waves – $z_1 = A\cos(kx - \omega t)$, $z_2 = A\cos(ky + \omega t)$ and $z_3 = A\cos(kz - \omega t)$. Which two waves can produce stationary waves ?

(A) 1 and 2 (B) 2 and 3

(C) 1 and 3 (D) none of the above

Q.69 The distance between two consecutive antinodes is -

(A) $\frac{\lambda}{4}$ (B) $\frac{\lambda}{2}$

(C) λ (D) 2λ

Q.70 The distance between consecutive node and antinode is -

(A) $\frac{\lambda}{4}$ (B) $\frac{\lambda}{2}$

(C) λ (D) 2λ

Q.71 The equation y = 0.15 sin 5x cos 300t represents a stationary wave. The wavelength of this stationary wave will be -

(A) zero (B)1.256 m

(C) 2.512 m (D) 0.628 m

Q.72 The equation of a stationary wave is $Y = 10 \sin \frac{\pi x}{4} \cos 20\ \pi t$. The distance between two consecutive nodes in metres is -

(A) 4 (B) 2 (C) 5 (D) 8

Q.73 The phase difference between the two particles situated on both the sides of a node is -

(A) 0º (B) 90º

(C) 180º (D) 360º

Q.74 Which of the following expression is that of a stationary wave –

(A) A sinωt (B) A sinωt coskx

(C) A sin ($\omega t - kx$) (D) A coskx

Q.75 For the stationary wave, $y = 4 \sin(\pi x/15) \cos(96\pi t)$ the distance between a node and the next antinode is –

(A) 7.5 (B) 15 (C) 22.5 (D) 30

Q.76 A wave represented by the equation $y = a \cos(kx - \omega t)$ is superposed with another wave to form a stationary wave such that the point x = 0 is a node. The equation of the other wave is –

(A) $a \sin(kx - \omega t)$ (B) $-a \sin(kx + \omega t)$

(C) $-a \cos(kx - \omega t)$ (D) $-a \cos(\omega t + kx)$

Q.77 In a stationary wave all particles are –

(A) At rest at the same time twice in every period of oscillation

(B) At rest at the same time once in every period of oscillation

(C) Never at rest at the same time

(D) At rest always

Q.78 In the stationary waves in an open organ pipe -

(A) Both the ends are antinodes and in between them there is at least one node

(B) Both the ends are nodes and in between them there is at least one antinode

(C) Antinode at one end and node at the other

(D) Both the ends are antinodes and in between them there is no node.

Questions based on Vibration in string

Q.79 A stretched string of length L, fixed at both ends can sustain stationary waves of wavelength λ given by -

(A) $\lambda = n^2 / 2L$ (B) $\lambda = L^2 / 2n$

(C) $\lambda = 2L/n$ (D) $\lambda = 2Ln$

Q.80 In a stretched string -

(A) Only even harmonics are produced

(B) Only odd harmonics are produced

(C) Even as well as odd harmonics are produced

(D) Neither even nor odd harmonics are produced

Q.81 A wire of linear mass density 9×10^{-3} kg /m is stretched between two rigid supports under a tension of 360 N. The wire resonates at frequency 210 Hz. The next higher frequency at which the same wire resonates is 280 Hz. The number of loops produced in first case will be -

(A) 1 (B) 2 (C) 3 (D) 4

Questions based on Sonometer experiment

Q.82 The waves produced in the wire of a sonometer are -

(A) Transverse, progressive and polarized

(B) Longitudinal

(C) Transverse, stationary and polarized

(D) Transverse, stationary and unpolarised

Q.83 The length of the sonometer wire is fixed between two bridges. Its frequency can be increased -
(A) By increasing tension and decreasing mass per unit length of wire
(B) By decreasing tension and increasing mass per unit length of wire
(C) By increasing tension and mass per unit length of wire
(D) By decreasing tension and mass per unit length of the wire

Q.84 Four wires of same length and same material, whose diameters are in the ratio 4 : 3 : 2 :1, are clamped in such a way that each wire produces note of frequency double that of the preceding wire. If the tension in the first wire is 2 Kg-wt, then tension in the second wire will be -
(A) 4.5 (B) 8 (C) 9 (D) 16

Q.85 A 110 cm long wire is to be divided into three segments by two bridges. The ratio of frequencies of three segments is 1 : 2 : 3 . The positions of the bridges will be -
(A) 20 cm from one end 60 cm from another end
(B) 60 cm from one end and 20 cm from another end
(C) 30 cm from one end and 70 cm from another end
(D) 40 cm from one end and 50 cm from another end

Q.86 The relation between frequency 'n' of the string, if $n_1, n_2, n_3, ...$ are the frequencies of segments of the stretched string, is:
(A) $n = n_1 + n_2 + n_3 + ...$
(B) $n = \sqrt{n_1 \times n_2 \times n_3 \times ....}$
(C) $\frac{1}{n} = \frac{1}{n_1} + \frac{1}{n_2} + \frac{1}{n_3} + ...$
(D) none of these

Questions based on Laws of string

Q.87 Which of the following laws of strings is not correct -
(A) $n \propto \sqrt{T}$ (B) $n \propto \frac{1}{\ell}$
(C) $n \propto \frac{1}{\sqrt{m}}$ (D) $n \propto l$

Q.88 In a stretched string under tension and fixed at both ends, the tension is increased by four times, and the length is doubled, the frequency
(A) Becomes half
(B) Remains the same
(C) Becomes twice
(D) Becomes four times

Q.89 The total mass of a sonometer wire remains constant. Length become 4 times, its frequency will become -
(A) 4 times (B) 1/2 times
(C) 8 times (D) $\sqrt{2}$ times

Q.90 The frequency of a note produced by vibrating stretched string increases if -
(A) Tension in it decreases
(B) Tension in it increases
(C) Its length increases
(D) Its mass per unit length increases

Q.91 The frequency of a sitar wire is 440 vibrations per second. If the sitar player reduces the length of the wire by 1/5 th, then the change in the frequency of sitar wire will be -
(A) 2200 vibrations /sec
(B) 1760 vibrations /sec
(C) 440 vibrations /sec
(D) 110 vibrations /sec

Q.92 The frequency ratio of two wires of copper is 2 : 3 if the diameter of the first wire is 0.6mm, the diameter of the other wire is -
(A) 0.9 mm (B) 0.4 mm
(C) 0.27 mm (D) 0.8 mm

Q.93 Two similar wires of length l and 2 l of same material produces vibrations of 100Hz and 150 Hz . The ratio of tensions in them is -
(A) 2 : 3 (B) 3 : 2 (C) 1 : 9 (D) 1 : 4

Q.94 If the density of materials of two strings of same length, tension and area of cross section are $2Kg/m^3$ and $4Kg/m^3$ respectively then the ratio of their frequencies will be -
(A) $\sqrt{2} : 1$ (B) $1 : \sqrt{2}$
(C) 1 : 2 (D) 2 : 1

ANSWER KEY

LEVEL # 1

Q.No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Ans.	D	C	A	A	B	C	C	D	A	D	B	A	B	A	D	A	B	C	A	D
Q.No.	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Ans.	B	A	B	D	C	D	D	C	C	C	A	A	C	C	A	C	A	A	A	A
Q.No.	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Ans.	C	B	B	A	A	D	D	D	C	D	D	C	D	D	B	C	D	A	A	B
Q.No.	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
Ans.	A	B	C	B	C	A	A	D	B	A	B	A	C	B	A	D	A	A	C	C
Q.No.	81	82	83	84	85	86	87	88	89	90	91	92	93	94						
Ans.	C	C	A	A	B	C	D	C	B	B	D	B	C	A						