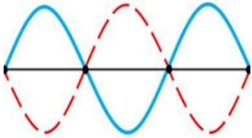


14. A transverse progressive wave is given by the equation: $y = 2 \cos [\pi (0.5x - 200 t)]$ Where x and y are in cm and t is in sec. Which of the following statement is true for this wave?
- a. Wavelength 2 cm and velocity 400 cm/sec. b. Wavelength 2 cm and amplitude 2 cm
c. Wavelength 4 cm and frequency 100 Hertz. d. Amplitude 2 cm and frequency 200 Hertz.
15. In stationary wave the particle velocity at the nodal positions is
- a. maximum and finite b. minimum but non-zero c. zero d. infinite
16. The amplitude of superposition of two waves $y_1 = 5 \sin \omega t$ and $y_2 = 5 \cos \omega t$ is
- a. 0 b. 5 c. $5\sqrt{2}$ d. 10
17. A standing wave is shown in the figure. The number of nodes and antinodes are
- a. 4 nodes 3 antinodes b. 3 nodes, 4 antinodes
c. 3 nodes, 3 antinodes d. 4 nodes, 4 antinodes
- 
18. A wave is represented by the equation $y = 7 \sin (7\pi t - 0.04 \pi x - (\pi/3))$ x is in meter and t is in second. The speed of the wave is
- a. 175 m/s b. 49 m/s c. 49π m/s d. 0.028 m/s
19. The equation of a progressive wave is given by: $y = 4 \sin \pi \left[\left(\frac{t}{5} - \frac{x}{9} \right) + \frac{\pi}{6} \right]$ Where x and y are in meter. Then which of the following is correct:
- a. $\lambda = 18$ m b. $v = 5$ cm/s c. $A = 0.04$ cm d. $f = 50$ Hz
20. For good audibility, the reverberation time is nearly
- a. 0.1 sec b. 1 sec c. 10 sec d. 100 sec
21. A progressive wave is represented by a $y = 5 \sin(100\pi t - 2 \pi x)$ where x and y are in m and t is in sec. The maximum particle velocity is
- a. 100π ms⁻¹ b. 200π ms⁻¹ c. 400π ms⁻¹ d. 500π ms⁻¹
22. At a certain instant, a stationary transverse wave is found to have maximum kinetic energy. The appearance of the string at that instant is
- a. Straight line b. sinusoidal with amplitude A
c. sinusoidal with amplitude $A/2$ d. sinusoidal with amplitude $A/3$
23. Wave equations of two particles are: $y_1 = a \sin (\omega t - kx)$ & $y_2 = a \sin (\omega t + kx)$, then we may say:
- a. the waves are moving in opposite directions b. phase difference between waves is 90°
c. phase difference between wave is 180° d. phase difference between wave is 0°
24. Two identical sinusoidal waves each of amplitude 10 mm with a phase difference of 90° are travelling in the same direction in a string. The amplitude of the resultant wave is
- a. 5 mm b. $10\sqrt{2}$ mm c. 10 mm d. 20 mm
25. For the travelling harmonic wave $y(x, t) = 2 \cos 2\pi(10t - 0.008x + 0.35)$ where x and y are in cm and t is in sec. The phase difference between oscillatory motion of two points separated by a distance of 0.5 m is
- a. 0.2π rad b. 0.4π rad c. 0.6π rad d. 0.6π rad
26. Two waves are represented by the equation $y_1 = a \sin (\omega t + kx + 0.57)$ m and $y_2 = a \cos(\omega t + kx)$ m where x is in meters and t is in seconds. The phase difference between them is
- a. 1.0 radian b. 1.25 radian c. 1.57 radian d. 2.15 radian
27. A transverse wave is represented by $y = A \sin(\omega t - kx)$. For what value of the wavelength is the wave velocity equal to the maximum particle velocity?
- a. $\frac{\pi A}{2}$ b. πA c. $2\pi A$ d. A