

Prayas JEE (2025)

Physics

Waves

DPP: 4

- Q1** In a standing wave, node is a point of
(A) maximum strain
(B) maximum pressure
(C) maximum density
(D) All of these
- Q2** In stationary waves
(A) Energy is uniformly distributed
(B) Energy is minimum at nodes and maximum at antinodes
(C) Energy is maximum at nodes and minimum at antinodes
(D) Alternating maximum and minimum energy producing at nodes and antinodes
- Q3** When a stationary wave is formed then its frequency is
(A) Same as that of the individual waves
(B) Twice that of the individual waves
(C) Half that of the individual waves
(D) None of the above
- Q4** Equation of a stationary wave is $y = 10 \sin \frac{\pi x}{4} \cos 20\pi t$. Distance between two consecutive nodes is
(A) 4 (B) 1
(C) 2 (D) 8
- Q5** A string vibrates according to the equation $y = 5 \sin \left(\frac{2\pi x}{3} \right) \cos 20\pi t$, where x and y are in cm and t in sec. The distance between two adjacent nodes is
(A) 3 cm
(B) 4.5 cm
(C) 6 cm
(D) 1.5 cm
- Q6** A string (of length l) fixed at both the ends is vibrating in two segments. The wavelength of the corresponding wave is
(A) $\frac{l}{4}$
(B) $\frac{l}{2}$
(C) l
(D) $2l$
- Q7** A 1 cm long string vibrates with fundamental frequency of 256 Hz. If the length is reduced to $\frac{1}{4}$ cm keeping the tension unaltered, the new fundamental frequency will be
(A) 64 (B) 256
(C) 512 (D) 1024
- Q8** If the tension of sonometer's wire increases four times then the fundamental frequency of the wire will increase by
(A) 2 times
(B) 4 times
(C) $1/2$ times
(D) None of the above

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Answer Key

Q1 (D)

Q2 (B)

Q3 (A)

Q4 (A)

Q5 (D)

Q6 (C)

Q7 (D)

Q8 (A)



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