

## Examrace

### Competitive Exams: Physics MCQs (Practice\_Test 19 of 35)

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1. The particles of a medium oscillate about their equilibrium positions, whenever a wave travels through that medium, The phase difference between the oscillations of two such particles varies
  - a. with time but not with distance separating them
  - b. with distance separating them but not with time
  - c. with distance separating them as well as with time
  - d. neither with distance separating them nor with time
2. A mass of 1 kg suspended from a spring whose force constant is  $400 \text{ Nm}^{-1}$ , executes simple harmonic oscillation. When the total energy of the oscillator is 2 J, the maximum acceleration experienced by the mass will be
  - a.  $2 \text{ ms}^{-2}$
  - b.  $4 \text{ ms}^{-2}$
  - c.  $40 \text{ ms}^{-2}$
  - d.  $400 \text{ ms}^{-2}$
3. Consider the following statements: The total energy of a particle executing simple harmonic motion depends on its
  - a. amplitude.
  - b. period
  - c. displacementOf these statements:
  - a. 1 and 2 are correct
  - b. 2 and 3 are correct
  - c. 1 and 3 are correct
  - d. 1,2 and 3 are correct
4. Three simple harmonic oscillators, with amplitudes  $A_1 > A_2 > A_3$ , pass through their respective equilibrium positions with the same velocity. If these oscillators have the

same mass, then their characteristic frequencies  $w_1, w_2, w_3$  will be related to each other as.

a.  $w_1 A_1 = w_2 A_2 = w_3 A_3$

b.  $w_1^2 A_1 = w_2^2 A_2 = w_3^2 A_3$

c.  $w_1 A_1^2 = w_2 A_2^2 = w_3 A_3^2$

d.  $(w_1/A_1) = (w_2/A_2) = (w_3/A_3)$

5. Two simple harmonic waves of the same amplitude and frequency differ by a phase  $\pi/2$ . When they are fed simultaneously to the X and y-plates of C. R. O. the screen would display the trace of

a. a circle

b. an ellipse

c. a straight line

d. a square

6. The amplitude of the vibrating particle due to superposition of two SHMs  $y_1 = \sin(\omega t + \pi/3)$  and  $y_2 = \sin \omega t$

a. 1

b.  $2 \frac{1}{2}$

c.  $3 \frac{1}{2}$

d. 2