

NEET OSCILLATIONS — SIMPLE HARMONIC MOTION AND ITS EQUATION — PYQS

Max. Marks: 40

Questions: 10

Section A (MCQ) — 10 questions

- Q.1** A cylindrical cork of uniform density floats in a liquid of density ρ_1 . If the cork is depressed slightly and released, it oscillates harmonically with time period T . If the same cork floats in another liquid of density ρ_2 , then the similar oscillation has time period $2T$. The value of ρ_2/ρ_1 is:

[RE-NEET (UG) 2026]

- (1) $1/4$ (2) 4 (3) 2 (4) $1/2$

Scan or tap for the full solution



- Q.2** If $x = 5\sin\left(\pi t + \frac{\pi}{3}\right)$ m represents the motion of a particle executing simple harmonic motion, the amplitude and time period of motion, respectively, are

[NEET (UG) 2024]

- (1) 5 cm, 2 s (2) 5 m, 2 s
(3) 5 cm, 1 s (4) 5 m, 1 s

Scan or tap for the full solution



- Q.3** The two-dimensional motion of a particle, described by $\vec{r} = (\hat{i} + 2\hat{j})A\cos\omega t$ is a/an:

- A. parabolic path
B. elliptical path
C. periodic motion
D. simple harmonic motion

Choose the correct answer from the options given below:

[RE-NEET (UG) 2024]

- (1) B, C and D only (2) A, B and C only
(3) A, C and D only (4) C and D only

Scan or tap for the full solution



- Q.4** The displacement of a particle executing simple harmonic motion is given by $y = A_0 + A\sin\omega t + B\cos\omega t$.

Then the amplitude of its oscillation is given by :

[NEET (UG) 2019]

- (1) $\sqrt{A^2 + B^2}$ (2) $A + B$
(3) $A + \sqrt{A^2 + B^2}$ (4) $\sqrt{A_0^2 + (A + B)^2}$

Scan or tap for the full solution



- Q.5** When two displacements represented by $y_1 = a\sin(\omega t)$ and $y_2 = b\cos(\omega t)$ are superimposed the motion is

[AIPMT 2015 (Cancelled)]

- (1) simple harmonic with amplitude $\sqrt{a^2 + b^2}$
(2) simple harmonic with amplitude $\frac{(a+b)}{2}$
(3) not a simple harmonic
(4) simple harmonic with amplitude $\frac{a}{b}$

Scan or tap for the full solution



- Q.6** Two particles are oscillating along two close parallel straight lines side by side, with the same frequency and amplitudes. They pass each other, moving in opposite directions when their displacement is half of the amplitude. The mean positions of the two particles lie on a straight line perpendicular to the paths of the two particles. The phase difference is

[AIPMT 2011 (Mains)]

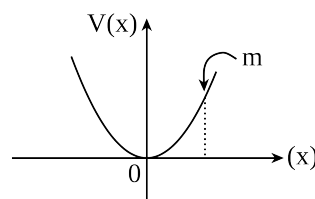
- (1) $\frac{\pi}{6}$ (2) 0 (3) $\frac{2\pi}{3}$ (4) π

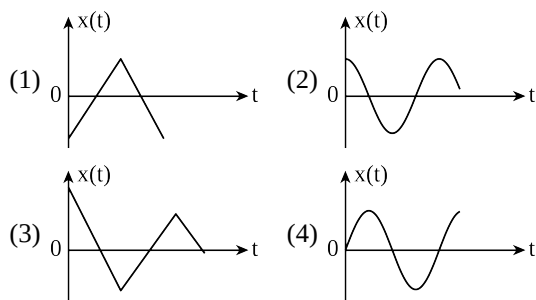
Scan or tap for the full solution



- Q.7** A particle of mass m is released from rest and follows a parabolic path as shown. Assuming that the displacement of the mass from the origin is small, which graph correctly depicts the position of the particle as a function of time?

[AIPMT 2011 (Prelims)]





Scan or tap for the
full solution



Q.8 Out of the following functions representing motion of a particle which represents SHM

(1) $y = \sin \omega t - \cos \omega t$

(2) $y = \sin^3 \omega t$

(3) $y = 5 \cos\left(\frac{3\pi}{4} - 3\omega t\right)$

(4) $y = 1 + \omega t + \omega^2 t^2$

[AIPMT 2011 (Prelims)]

(1) Only (1)

(2) Only (4) does not represent SHM

(3) Only (1) and (3)

(4) Only (1) and (2)

Scan or tap for the
full solution



Q.9 The displacement of a particle along the x-axis is given by $x = a \sin^2 \omega t$. The motion of the particle corresponds to

[AIPMT 2010 (Prelims)]

(1) simple harmonic motion of frequency ω/π

(2) simple harmonic motion of frequency $3\omega/2\pi$

(3) non simple harmonic motion

(4) simple harmonic motion of frequency $\omega/2\pi$

Scan or tap for the
full solution



Q.10 A particle executes simple harmonic oscillation with an amplitude a . The period of oscillation is T . The minimum time taken by the particle to travel half of the amplitude from the equilibrium position is

[AIPMT 2007]

(1) $T/8$

(2) $T/12$

(3) $T/2$

(4) $T/4$

Scan or tap for the
full solution



ANSWER KEY

Ques.	1	2	3	4	5	6	7	8	9	10	
Ans.	1	2	4	1	1	3	2	3	1	2	