



Class 11 Physics | Oscillations

MCQ WORKSHEET • 15 questions • Choose one correct option • Suggested time: 25 minutes

1. For SHM, acceleration a and displacement x are related by:

- A. $a = \text{constant}$ B. $a = \omega^2 x$ C. $a = -\omega^2 x$ D. $a = -\omega x^2$

2. A mass executes SHM with amplitude A . Its speed is maximum at:

- A. Every position equally
B. $x = -A$
C. $x = A$
D. Mean position

3. At an extreme position in SHM:

- A. Speed and acceleration are zero
B. Speed is zero and acceleration magnitude is maximum
C. Speed is maximum
D. Acceleration is zero

4. A frequency of 5 Hz corresponds to period:

- A. 2π s B. 5 s C. 10 s D. 0.2 s

5. For $x = 0.04 \cos(10t)$ in SI units, maximum speed is:

- A. 0.4 m/s B. 0.04 m/s C. 4 m/s D. 10 m/s

6. For the same SHM, maximum acceleration is:

- A. 4 m/s^2 B. 0.4 m/s^2 C. 0.04 m/s^2 D. 40 m/s^2

7. A spring-mass oscillator has period:

- A. $2\pi\sqrt{(m/k)}$ B. $\sqrt{(mk)}$ C. $2\pi m/k$ D. $2\pi\sqrt{(k/m)}$

8. If oscillator mass becomes four times, its spring period becomes:

- A. Unchanged B. Four times C. Twice D. Half

9. If spring constant becomes four times at fixed mass, period becomes:

- A. Twice B. Four times C. One-fourth D. Half

10. A small-angle pendulum has period:

- A. $2\pi\sqrt{(g/L)}$ B. $2\pi\sqrt{(L/g)}$ C. $\sqrt{(Lg)}$ D. $2\pi L/g$

11. To double a pendulum's period, its length must become:

- A. Four times B. Twice C. One-fourth D. Half

12. Total energy of a spring oscillator of amplitude A is:

- A. $kA^2/2$ B. $kA/2$ C. kA D. kA^2

13. At $x = A/2$, potential energy as a fraction of total SHM energy is:

- A. 1 B. $1/2$ C. $3/4$ D. $1/4$

14. SHM displacement and velocity differ in phase by:

- A. $\pi/2$ rad B. 2π rad C. 0 D. π rad

15. An SHM particle goes from mean position to the next extreme in:

- A. $T/4$ B. T C. $2T$ D. $T/2$

ANSWER KEY — check after completing all 15 questions

1.C 2.D 3.B 4.D 5.A 6.A 7.A 8.C 9.D 10.B 11.A 12.A 13.D 14.A 15.A

Original exam-style practice • Reference notes: www.physics.guru/cbse-practice-papers/ • Not an official paper