

Oscillations

Question 1.

If an simple pendulum oscillates with an amplitude of 50 mm and time period of 2s, then its maximum velocity is

- (a) 0.10 m/s
- (b) 0.16 m/s
- (c) 0.25 m/s
- (d) 0.5 m/s

▼ [Answer](#)

Answer: (b) 0.16 m/s

Question 2.

If the frequency of the particle executing S.H.M. is n , the frequency of its kinetic energy becoming maximum is

- (a) $n/2$
- (b) n
- (c) $2n$
- (d) $4n$

▼ [Answer](#)

Answer: (c) $2n$

Question 3.

Spring is pulled down by 2 cm. What is amplitude of motion?

- (a) 0 cm
- (b) 6 cm
- (c) 2 cm
- (d) cm

▼ [Answer](#)

Answer: (c) 2 cm

Question 4.

The period of thin magnet is 4 sec. if it is divided into two equal halves then the time period of each part will be

- (a) 4 sec
- (b) 1 sec
- (c) 2 sec
- (d) 8 sec

▼ [Answer](#)

Answer: (c) 2 sec

Question 5.

The acceleration of particle executing S.H.M. when it is at mean position is

- (a) Infinite
- (b) Varies
- (c) Maximum
- (d) Zero

▼ Answer

Answer: (d) Zero

Question 6.

A spring of force constant k is cut into two pieces such that one piece is double the length of the other. Then the long piece will have a force constant of

- (a) $2k/3$
- (b) $3k/2$
- (c) $3k$
- (d) $6k$

▼ Answer

Answer: (b) $3k/2$

Question 7.

Particle moves from extreme position to mean position, its

- (a) Kinetic energy increases, potential energy decreases
- (b) Kinetic energy decreases, potential energy increases
- (c) Both remain constant
- (d) Potential energy becomes zero and kinetic energy remains constant

▼ Answer

Answer: (a) Kinetic energy increases, potential energy decreases

Question 8.

Graph of potential energy vs. displacement of a S.H. Oscillator is

- (a) parabolic
- (b) hyperbolic
- (c) elliptical
- (d) linear

▼ Answer

Answer: (a) parabolic

Question 9.

The time-period of S.H.O. is 16 sec. Starting from mean position, its velocity is 0.4 m/s after 2 sec. Its amplitude is

- (a) 0.36 m
- (b) 0.72 m
- (c) 1.44 m
- (d) 2.88 m

▼ Answer

Answer: (c) 1.44 m

Question 10.

A simple pendulum is made of a body which is a hollow sphere containing mercury suspended by means of a wire. If a little mercury is drained off, the period of pendulum will

- (a) Remain unchanged
- (b) Increase

- (c) Decrease
- (d) Become erratic

▼ Answer

Answer: (b) Increase

Question 11.

A pendulum suspended from the roof of a train has a period T (When the train is at rest). When the train is accelerating with a uniform acceleration a , the time period of the pendulum will

- (a) Increase
- (b) Decrease
- (c) Remain unaffected
- (d) Become infinite

▼ Answer

Answer: (b) Decrease

Question 12.

In the case of forced oscillations, which of the following statements is not true?

- (a) frequency equals that of external periodic force
- (b) amplitude depends upon the damping coefficient
- (c) amplitude tends to infinity at resonance
- (d) higher the damping coefficient, lower is the amplitude at resonance

▼ Answer

Answer: (c) amplitude tends to infinity at resonance

Question 13.

Graph of potential energy vs. displacement of a S.H. Oscillator is

- (a) parabolic
- (b) hyperbolic
- (c) elliptical
- (d) linear

▼ Answer

Answer: (a) parabolic

Question 14.

The period of oscillation of a simple pendulum of constant length at earth's surface is T , its period inside a mine is

- (a) Greater than T .
- (b) Less than T .
- (c) Equal to T .
- (d) Cannot be compared

▼ Answer

Answer: (a) Greater than T .

Question 15.

If a simple pendulum oscillates with an amplitude of 50 mm and time period of 2s, then its maximum velocity is

- (a) 0.10 m/s

- (b) 0.16 m/s
- (c) 0.25 m/s
- (d) 0.5 m/s

▼ Answer

Answer: (b) 0.16 m/s

Question 16.

The period of a simple harmonic oscillator is 2 sec. The ratio of its maximum velocity and maximum acceleration is

- (a) π
- (b) $1/\pi$
- (c) 2π
- (d) 4

▼ Answer

Answer: (b) $1/\pi$

Question 17.

In damped oscillation, the angular frequency of the oscillator

- (a) keeps on decreasing
- (b) keeps on increasing
- (c) remains the same
- (d) fluctuates

▼ Answer

Answer: (c) remains the same

Question 18.

A simple pendulum of length l and mass (bob) m is suspended vertically. The string makes an angle θ with the vertical. The restoring force acting on the pendulum, is

- (a) $mg \tan \theta$
- (b) $mg \sin \theta$
- (c) $-mg \sin \theta$
- (d) $-mg \cos \theta$

▼ Answer

Answer: (c) $-mg \sin \theta$

Question 19.

In simple harmonic motion which statement is wrong.

- (a) A body in S.H.M. its velocity maximum at mean position
- (b) A body in S.H.M. its K.E. less at extreme position
- (c) A body in S.H.M. its acceleration more at extreme position its directions away from mean position
- (d) A body in S.H.M its acceleration less at mean position

▼ Answer

Answer: (c) A body in S.H.M. its acceleration more at extreme position its directions away from mean position

Question 20.

The period of oscillation of a mass M , having from a spring of force constant k is T . When additional mass m is attached to the spring, the period of oscillation becomes $5T/4$. $m/M =$

- (a) 9 : 16
- (b) 25 : 16
- (c) 25 : 9
- (d) 19 : 9

▼ [Answer](#)

Answer: (d) 19 : 9
