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 on piece is double the length of the other. Then the long piece will have a force constant of
(a) 2 k/3
(b) 3 k/2
(c) 3 k
(d) 6 k

▼ Answer

Answer: (b) 3 k/2

Question 7.
Particle moves from extreme position to mean position, its
(a) Kinetic energy increases, potential increases decreases
(b) Kinetic energy decreases, potential increases
(c) Both remains constant
(d) Potential energy becomes zero and kinetic energy remains constant

▼ Answer

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

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Question 8.
Grap 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.
Grap 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 earths surface is T, it 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 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 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/Π
(c) 2Π
(d) 4

▼ Answer

Answer: (b) 1/Π

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 q with the vertical. The restoring force acting on the pendulum, is
(a) mg tan θ
(b) mg sin θ
(c) -mg sinθ
(d) -mg cosθ

▼ Answer

Answer: (c) -mg sinθ

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

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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
