

LAITS PHYSICS NEET PART TEST-1 DATE: 13-12-20

DATE: 09-12-2020

TIME: 60mins

1 Which of the following is not the unit of surface tension?

Correct Options:

(D) $\frac{\text{kg}}{\text{s}}$

Solution:

Ans. (d)

2 A point traversed $\frac{3}{4}$ th of the circle of radius R in time t . The magnitude of the average velocity of the particle in this time interval t is

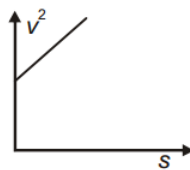
Correct Options:

(C) $\frac{R\sqrt{2}}{t}$

Solution:

Ans. (c)

3 v^2 versus s graph of a particle moving in a straight line is as shown in figure, where 'v' stands for velocity and 's' for displacement. Which of the following statement is wrong?



Correct Options:

(B) Initial velocity of particle is zero

Solution:

Ans. (b)

4 A ball is thrown upwards from the ground at time $t = 0$. It is at a height 100 m in upward and downward journey in time $t = t_1$ and $t = t_2$ respectively. If $g = 10 \text{ m/s}^2$ then $t_1 t_2$ is equal to

Correct Options:

(B) 20

Solution:

Ans. (b)

5 A stone is thrown vertically upward with an initial velocity v_0 . The distance travelled in time $\frac{1.5v_0}{g}$ is

Correct Options:

(C) $\frac{5v_0^2}{8g}$

Solution:

Ans. (c)

6 The velocity v of a particle as a function of its position x is expressed as $v = \sqrt{c_1 + c_2x}$, where c_1 and c_2 are positive constants. The acceleration of the particle is

Correct Options:

(B) $\frac{c_2}{2}$

Solution:

Ans. (b)

7 The velocity v of a particle moving in the positive direction of x -axis as $v = 5\sqrt{x}$, assuming that at $t = 0$, particle was at $x = 0$. What is the acceleration of the particle?

Correct Options:

(A) 12.5 m/s^2

Solution:

Ans. (a)

8 The dimension of the ratio of angular to linear momentum is

Correct Options:

(A) $[M^0LT^0]$

Solution:

Ans. (a)

9 An object is moving with a velocity 10 m/s. A constant force acts for 4 s on the object and gives it a speed of 2 m/s in the opposite direction. The acceleration produced is

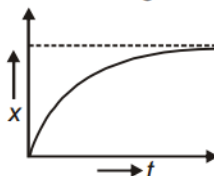
Correct Options:

(B) -3 m/s^2

Solution:

Ans. (b)

10 Which of the following is the correct conclusion from the given displacement (x) versus time (t) graph?



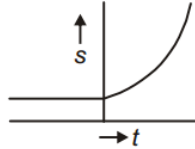
Correct Options:

(B) It represents retarded motion

Solution:

Ans. (b)

11 Figure shows a displacement (s) versus time (t) graph for a particle. Which of the following statements about the motion of the particle is true?



Correct Options:

(D) The particle velocity is zero for $t < 0$

Solution:

Ans. (d)

12 A ball is thrown horizontally and another is just dropped from the top of tower simultaneously. Which will reach the ground first?

Correct Options:

(C) Both the ball reach at the same time

Solution:

Ans. (c)

13 A projectile is projected with a linear momentum \vec{p} making angle θ with the horizontal. The change in momentum of the projectile on return to the ground will be

Correct Options:

(C) $2P \sin\theta$

Solution:

Ans. (c)

14 The displacement (x) and time (t) are related as $t = px^2 + qx + r$, where p , q and r are constants. What is the relation between velocity (v) and the acceleration (a)?

Correct Options:

(B) $a \propto v^3$

Solution:

Ans. (b)

15 What happens when we multiply a vector by -2?

Correct Options:

(A) Direction reverses and magnitude is doubled

Solution:

Ans. (a)

16 Which of the following set of forces can be applied on a body so that the body does not accelerate?

Correct Options:

(D) 9, 10, 12

Solution:

Ans. (d)

17 Two vectors \vec{P} and \vec{Q} are in the plane but the vector \vec{R} is not in their plane. In such a case $\vec{P} + \vec{Q} + \vec{R}$

Correct Options:

(B) Cannot be zero

Solution:

Ans. (b)

18 A particle has initial velocity $4(\text{ms}^{-1})\hat{i}$ and acceleration $2(\text{ms}^{-2})\hat{i} + 3(\text{ms}^{-2})\hat{j}$. The magnitude of velocity after 2 s will be

Correct Options:

(B) 10 m/s²

Solution:

Ans. (b)

19 A packet is released from a balloon accelerating upward with acceleration a . The acceleration of packet just after the release is

Correct Options:

(B) g downward

Solution:

Ans. (b)

20 A projectile is thrown with a velocity of 10 m/s at an angle of 30° with horizontal. The time taken by the particle when speed become same is nearly ($g = 10 \text{ m/s}^2$)

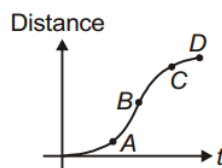
Correct Options:

(A) 1 s

Solution:

Ans. (a)

21 In the graph which is between distance and time. The maximum instantaneous speed of the particle is around the point



Correct Options:

(D) B

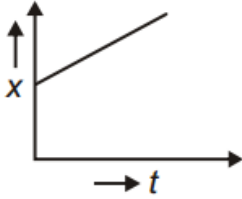
Solution:

Ans. (d)

22 Graph between x (position) and time (t) for zero acceleration is

Correct Options:

(B)



Solution:

Ans. (b)

23 A stone is released with zero velocity from the top of a tower reaches the ground in 4 s. The height of the tower is about

Correct Options:

(C) 80 m

Solution:

Ans. (c)

24 The displacement x of a particle varies with time t as $x^2 = 1 + t^2$. What is its acceleration?

Correct Options:

(C) $\frac{1}{x} - \frac{t^2}{x^3}$

Solution:

Ans. (c)

25 A stone dropped from the top of the tower it takes 8 s to reach the ground. How much time will it take to cover the first quarter of the distance?

Correct Options:

(A) 4 s

Solution:

Ans. (a)

26 A car is going eastwards with a velocity of 8 m/s. To the passengers in the car, a train appears to be moving northwards with a velocity 15 m/s. What is the actual velocity of the train?

Correct Options:

(B) 17 m/s

Solution:

Ans. (b)

27 A car travels 5 km along east, 16 km along north and then 17 km towards west. What will be its distance from the starting point?

Correct Options:

(D) 38 km

Solution:

Ans. (d)

28 Maximum and minimum of the resultant of two vectors of magnitudes P and Q are in the ratio 3 : 1. Which of the following relations is true?

Correct Options:

(A) $P = 2Q$

Solution:

Ans. (a)

29 Given that $\vec{P} \cdot \vec{Q} = 0$. Also $\vec{P} \times \vec{R} = 0$, what is the angle between \vec{Q} and \vec{R} ?

Correct Options:

(B) 90°

Solution:

Ans. (b)

30 The dimensions of '(Velocity)² ÷ radius' are the same as that of

Correct Options:

(D) Acceleration

Solution:

Ans. (d)

31 The X and Y components of vector \vec{A} have magnitude 6 and 6 respectively and that of $\vec{A} + \vec{B}$ have magnitude 10 and 9. What is the magnitude of \vec{B} ?

Correct Options:

(D) 5

Solution:

Ans. (d)

32 The motion of a particle along a straight line is described by equation $x = 8 + 12t - t^3$ where x is in metre and t is in second. The retardation of the particle when its velocity becomes zero is

Correct Options:

(D) 12 m/s^2

Solution:

Ans. (d)

33 Two balls are dropped from the same point after an interval of 1 s. What will be their separation after 3 s the release of the second ball? ($g = 10 \text{ m/s}^2$)

Correct Options:

(C) 35 m

Solution:

Ans. (c)

- 34 A bullet is fired vertically upwards with an initial velocity of 50 m/s. It covers a distance h_1 during the first second and a distance h_2 during the last 3 seconds of its upward motion. If $g = 10 \text{ m/s}^2$, h_1 and h_2 will be related as

Correct Options:

(C) $h_1 = h_2$

Solution:

Ans. (c)

- 35 A particle is projected from the ground at an angle θ ($\theta > 45^\circ$) with the horizontal with an initial speed of u . Time after which velocity vector of the projectile is perpendicular to the initial velocity

Correct Options:

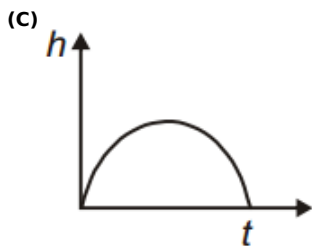
(A) $\frac{u}{g \sin \theta}$

Solution:

Ans. (a)

- 36 Which of the following is the graph between the height (h) of a projectile and time ' t ', when it is projected from the ground?

Correct Options:



Solution:

Ans. (c)

- 37 A boat is moving with a velocity $(3\mathbf{i} + 4\mathbf{j})$ with respect to ground. The water in the river is moving with a velocity $-3\mathbf{i} - 4\mathbf{j}$ with respect to the ground. The relative velocity of the boat with respect to water is

Correct Options:

(C) $6\mathbf{i} + 8\mathbf{j}$

Solution:

Ans. (c)

- 38 If velocity ' v ', force ' F ', and energy ' E ' are taken as fundamental units, then dimensional formula for mass will be

Correct Options:

(D) $v^{-2}F^0E$

Solution:

Ans. (d)

- 39 Which of the following remains constant during the motion of a projectile fired from a point?

Correct Options:

(D) Horizontal component of velocity

Solution:

Ans. (d)

40 The displacement (x) of a body from a reference point is given by

$\sqrt{x} = 2t + 3$, where x is in metres and t is in second. This shows that the body is

Correct Options:

(B) In accelerated motion

Solution:

Ans. (b)

41 Height of water that would be filled in a container of height 21 cm, so that it appears half filled to the observer, when viewed from the top of container, is $\left(\mu_w = \frac{4}{3}\right)$

Correct Options:

(C) 12 cm

Solution:

Ans. (c)

42 The refracting angle of prism is A and the refractive index of the material of the prism is $\cot \frac{A}{2}$. Then angle of minimum deviation is

Correct Options:

(D) $(180^\circ - 2A)$

Solution:

Ans. (d)

43 An equilateral prism deviates a ray through 40° for two angles of incidence differing by 20° . The possible angles of incidence are

Correct Options:

(A) $40^\circ, 60^\circ$

Solution:

Ans. (a)

44 A light of wavelength 750 nm in air enters a medium of refractive index 1.5. Inside the medium

Correct Options:

(D) Both (1) & (3)

Solution:

Ans. (d)

45 Sensitivity of human eye is maximum for wavelength

Correct Options:

(C) 555 nm

Solution:

Ans. (c)