ARJUNA (NEET)

Kinematics

DPP-07

1. A body dropped from top of a tower fall through 40 m during the last two seconds of its fall. The height of tower is ($g = 10$ m/s²)
(A) 60 m
(B) 45 m
(C) 80 m
(D) 50 m

2. What will be the ratio of the distance moved by a freely falling body from rest in 4th and 5th seconds of journey ?
(A) 4 : 5
(B) 7 : 9
(C) 16 : 25
(D) 1 : 1

3. A car is moving along a straight road with a uniform acceleration. It passes through two points P and Q separated by a distance with velocity 30 km/h and 40 km/h respectively. The velocity of the car midway between P and Q is
(A) 33.3 km/h
(B) $20\sqrt{2}$ km/h
(C) $25\sqrt{2}$ km/h
(D) 35 km/h

4. If a ball is thrown vertically upwards with speed u, the distance covered during the last t seconds of its ascent is
(A) ut
(B) $\frac{1}{2}gt^2$
(C) $ut - \frac{1}{2}gt^2$
(D) $(u + gt)t$

5. A particle is thrown vertically upward. Its velocity at half of the height is 10 m/s, then the maximum height attained by it
($g = 10$ m/s²)
(A) 8 m
(B) 20 m
(C) 10 m
(D) 16 m

6. If a car at rest accelerates uniformly to a speed of 144 km/h in 20 s, it covers a distance of
(A) 1440 km
(B) 2980 km
(C) 20 m
(D) 400 m

7. A car moving with a speed of 40 km/h can be stopped by applying brakes after atleast 2 m. If the same car is moving with a speed of 80 km/h, what is the minimum stopping distance ?
(A) 4 m
(B) 6 m
(C) 8 m
(D) 2 m

8. A body dropped from a height h with initial velocity zero, strikes the ground with a velocity 3 m/s. Another body of same mass dropped from the same height h with an initial velocity of 4 m/s. The final velocity of second mass, with which it strikes the ground is
(A) 5 m/s
(B) 12 m/s
(C) 3 m/s
(D) 4 m/s

9. The water drop falls at regular intervals from a tap 5 m above the ground. The third drop is leaving the tap at instant the first drop touches the ground. How far above the ground is the second drop at that instant ?
(A) 3.75 m
(B) 4.00 m
(C) 1.25 m
(D) 2.50 m

10. A car accelerates from rest at a constant rate α for some time after which it decelerates at a constant rate β and comes to rest. If total time elapsed is t, then maximum velocity acquired by car will be
(A) $\dfrac{(\alpha^2 - \beta^2)t}{\alpha\beta}$
(B) $\dfrac{(\alpha^2 + \beta^2)t}{\alpha\beta}$
(C) $\dfrac{(\alpha + \beta)t}{\alpha\beta}$
(D) $\dfrac{\alpha\beta t}{\alpha + \beta}$

11. A boy standing at the top of a tower of 20 m height drops a stone. Assuming $g = 10$ ms⁻², the velocity with which it hits the ground is
(A) 10.0 m/s
(B) 20.0 m/s
(C) 40.0 m/s
(D) 5.0 m/s

12. A ball is dropped from a high rise platform at $t = 0$ starting from rest. After 6 seconds another ball is thrown downwards from the same platform with a speed v. The two balls meet at $t = 18$ s. What is the value of v ?

(Take $g = 10$ m/s^2)

(A) 75 m/s   (B) 55 m/s

(C) 40 m/s   (D) 60 m/s

13. A particle starts its motion from rest under the action of a constant force. If the distance covered in first 10 seconds is S_1 and that covered in the first 20 seconds is S_2, then

(A) $S_2 = 3S_1$ (B) $S_2 = 4S_1$

(C) $S_2 = S_1$ (D) $S_2 = 2S_1$

14. A particle moves in a straight line with a constant acceleration. It changes its velocity from 10 ms^{-1} to 20 ms^{-1} while passing through a distance 135 m in t second. The value of t is

(A) 12   (B) 9

(C) 10   (D) 1.8

15. Object is projected up with speed u it is at same height at 4 sec & 6 sec, then find velocity of projection

(A) 20 m/s   (B) 30 m/s

(C) 50 m/s   (D) 40 m/s

ANSWERS

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

Note – If you have any query/issue

Mail us at support@physicswallah.org

support@physicswallah.org