

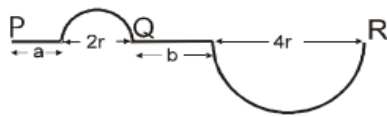
PHYSICS

TOPIC- RECTILINEAR MOTION

1. An old man goes for morning walk on a semicircular track of radius 40 m. If he starts from one end of the track and reaches to other end, the distance covered by the man and his displacement will respectively be
(A) 126 m, 80 m (B) 80 m, 126 m
(C) 80 m, 252 m (D) 252 m, 80 m

2. A body goes 10 km north and 20 km east. What will be the displacement from initial point ?
(A) 22.36 km (B) 2 km (C) 5 km (D) 30 km

3. A car starts from P and follows the path as shown in figure. Finally car stops at R. Distance travelled and displacement of the car if $a = 7$ m, $b = 8$ m and $r = \frac{11}{\pi}$ m? [Take $\pi = \frac{22}{7}$]

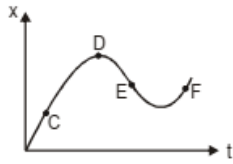


- (A) 48m, 36m (B) 48m, 42m (C) 48m, 32m (D) 48m, 40m
4. A car travels from A to B at a speed of 20 km h^{-1} and returns at a speed of 30 km h^{-1} . The average speed of the car for the whole journey is :
(A) 5 km h^{-1} (B) 24 km h^{-1} (C) 25 km h^{-1} (D) 50 km h^{-1}
5. A car moves for half of its time at 80 km/h and for rest half of time at 40 km/h . Total distance covered is 60 km . What is the average speed of the car :
(A) 60 km / h (B) 80 km / h (C) 120 km / h (D) 180 km / h
6. A car covers a distance of 2 km in 2.5 minute, if it covers half of the distance with speed 40 km/hr , the rest distance it will cover with speed
(A) 56 km/hr (B) 60 km/hr
(C) 50 km/hr (D) 48 km/hr
7. A body covers first $\frac{1}{3}$ part of its journey with a velocity of 2 m/s , next $\frac{1}{3}$ part with a velocity of 3 m/s and rest of the journey with a velocity 6 m/s . The average velocity of the body will be -
(A) 3 m/s (B) $\frac{11}{3} \text{ m/s}$ (C) $\frac{8}{3} \text{ m/s}$ (D) $\frac{4}{3} \text{ m/s}$
8. A truck travelling due north at 20 m/s turns west and travels with the same speed. What is the change in velocity?
(A) 40 m/s north-west
(B) $20\sqrt{2} \text{ m/s}$ north-west
(C) 40 m/s south-west (D) $20\sqrt{2} \text{ m/s}$ south-west
9. The displacement y (in meters) of a body varies with time (in seconds) according to the equation $y = -\frac{2}{3}t^2 + 16t + 2$. How long does the body take to come to rest ?
(A) 8 seconds (B) 10 seconds (C) 12 seconds (D) 14 seconds
10. A particle moves along a straight line such that its displacement at any time t is given by : $s = t^3 - 6t^2 + 3t + 4$ metres. The velocity when the acceleration is zero is :
(A) 3 ms^{-1} (B) -12 ms^{-1} (C) 42 ms^{-1} (D) -9 ms^{-1}
11. A particle is moving in a straight line. Its displacement at time t is given by $s = -4t^2 + 2t$, then its velocity and acceleration at time $t = \frac{1}{2}$ second are
(A) $-2, -8$ (B) $2, 6$ (C) $-2, 8$ (D) $2, 8$

12. A particle moving with a uniform acceleration travels 24 m and 64 m in the first two consecutive intervals of 4 sec each. Its initial velocity is
 (A) 1 m/sec (B) 10 m/sec
 (C) 5 m/sec (D) 2 m/sec
13. A body starts from rest and is uniformly accelerated for 30 s. The distance travelled in the first 10 s is x_1 , next 10 s is x_2 and the last 10 s is x_3 . Then $x_1 : x_2 : x_3$ is the same as
 (A) 1 : 2 : 4 (B) 1 : 2 : 5 (C) 1 : 3 : 5 (D) 1 : 3 : 9
14. The initial velocity of the particle is 10 m/sec and its retardation is 2m/sec^2 . The distance moved by the particle in 5th second of its motion is :
 (A) 1 m (B) 19 m (C) 50 m (D) 75 m
15. A body starts from rest and moves with constant acceleration. What is the ratio of the distance travelled by the body during the 4th and 3rd second :
 (A) 7/5 (B) 5/7 (C) 7/3 (D) 3/7
16. A car moving with a speed of 50 km/hr, can be stopped by brakes after at least 6m. If the same car is moving at a speed of 100 km/hr, the minimum stopping distance is :
 (A) 6 m (B) 12 m
 (C) 18 m (D) 24 m
17. An object accelerates from rest to a velocity 27.5 m/s in 10 sec then find distance covered by object in next 10 sec :
 (A) 550 m (B) 137.5 m (C) 412.5 m (D) 275 m
18. A body is dropped from the top of a tower with zero velocity and reaches ground in 4 seconds. The height of the tower is about [$g = 10 \text{ m/s}^2$]
 (A) 20 m (B) 40 m
 (C) 80 m (D) 160 m
19. A body thrown up with a finite speed is caught back after 4 sec. The speed of the body with which it is thrown up is
 (A) 10 m/sec (B) 20 m/sec
 (C) 30 m/sec (D) 40 m/sec
20. A stone is thrown vertically upwards from the top of a tower with a velocity u and it reaches the ground with a velocity $3u$. The height of the tower is :
 (A) $3u^2/g$ (B) $4u^2/g$ (C) $6u^2/g$ (D) $9u^2/g$
21. A ball dropped from a height h reaches the ground in time T . What is its height at time $T/2$?
 (A) $3h/4$ (B) $h/8$ (C) $h/4$ (D) $h/2$
22. A ball released from a great height falls freely towards earth. Another body is released from the same height exactly one second later. The separation between the two bodies after two second the release of the second body is
 (A) 9.8 m (B) 49 m
 (C) 24.5 m (D) 19.6 m
23. Two bodies, A(of mass 1kg) and B (of mass 3kg), are dropped from heights of 16m and 25m, respectively. The ratio of the time taken by them to reach the ground is
 (A) 12/5 (B) 5/12
 (C) 4/5 (D) 5/4
24. A body A is projected upwards with a velocity of 98 m/s. The second body B is projected upwards with the same initial velocity but after 4 sec. Both the bodies will meet after :
 (A) 6 sec (B) 8 sec (C) 10 sec (D) 12 sec
25. A body falls freely from rest. It covers as much distance in the last second of its motion as covered in the first three seconds. The body has fallen for a time of :
 (A) 3 s (B) 5 s (C) 7 s (D) 9 s

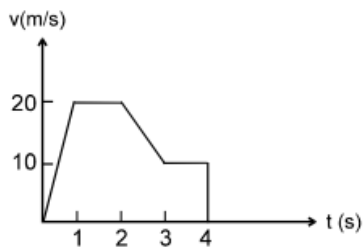
26. A man in a balloon rising vertically with an acceleration of 4.9 m/sec^2 releases a ball 2 sec after the balloon is let go from the ground. The greatest height above the ground reaches by the ball is ($g = 9.8 \text{ m/sec}^2$)
 (A) 14.7 m (B) 19.6 m (C) 9.8 m (D) 24.5 m

27. The displacement–time graph of a moving particle is shown below. The instantaneous velocity of the particle is negative at the point :



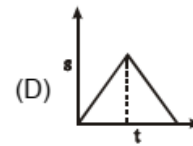
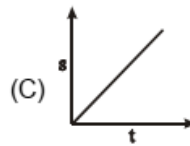
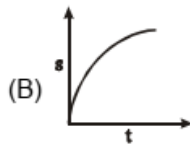
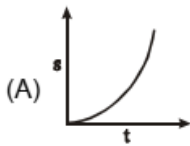
- (A) C (B) D (C) E (D) F

28. The variation of velocity of a particle moving along a straight line is shown in the figure. The distance travelled by the particle in 4 s is :

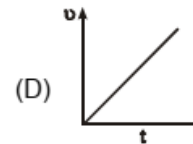
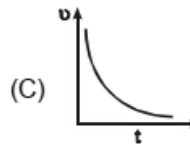
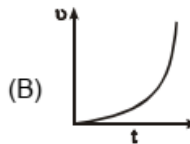
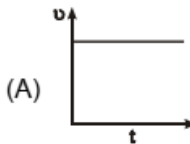


- (A) 25 m (B) 30 m (C) 55 m (D) 60 m

29. Which graph represents the uniform acceleration :



30. Which of the following velocity–time graphs represent uniform motion :



ANSWER- KEY

1. A 2. A 3. A 4. B 5. A 6. B 7. A
8. D 9. C 10. D 11. A 12. A 13. C 14. A
15. C 16. B 17. C 18. C 19. B 20. B 21. A
22. C 23. C 24. D 25. B 26. A 27. C 28. C
29. A 30. A