Yakeen NEET 2.0 2026

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DPP: 13

Motion in a Straight Line

Q1 If the velocity of a particle is given by $v = (180 - 16x)^{1/2}\ \mathrm{m/s}$, then its acceleration will be

(A) Zero

(B) $8\ \mathrm{m/s^2}$

(C) $-8\ \mathrm{m/s^2}$

(D) $4\ \mathrm{m/s^2}$

Q2 The velocity acquired by a body moving with uniform acceleration is $30\ \mathrm{m/s}$ in 2 seconds and $60\ \mathrm{m/s}$ in 4 seconds. The initial velocity is:

(A) zero

(B) $2\ \mathrm{m/s}$

(C) $4\ \mathrm{m/s}$

(D) $10\ \mathrm{m/s}$

Q3 If a body starts from rest, the time in which it covers a particular displacement with uniform acceleration is:

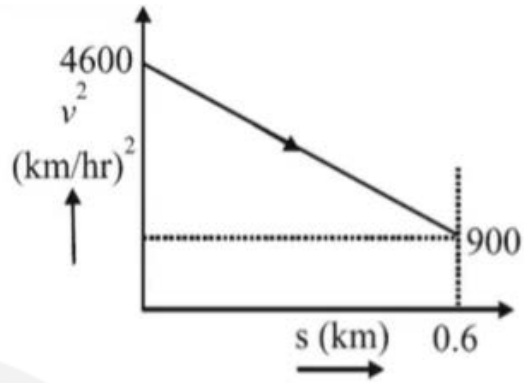
(A) Inversely proportional to the square root of the displacement

(B) Inversely proportional to the displacement

(C) Directly proportional to the displacement

(D) Directly proportional to the square root of the displacement

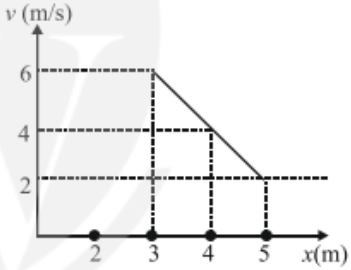
Q4 Graph between the square of the velocity (v) of a particle and the distance (s) moved is shown in figure. The acceleration of the particle in kilometres per hour square is:



(A) 2250 (B) 3084

(C) -2250 (D) -3084

Q5 The velocity (v) of a particle varies with position (x) as shown in the graph. Its acceleration when $x = 4\ m$ will be



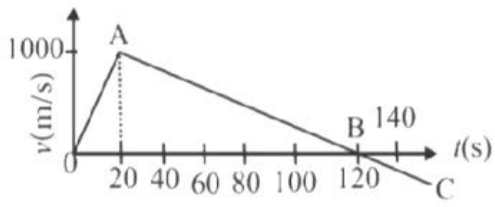
(A) $-8\ \mathrm{m/s^2}$

(B) $8\ \mathrm{m/s^2}$

(C) $2\ \mathrm{m/s^2}$

(D) $-2\ \mathrm{m/s^2}$

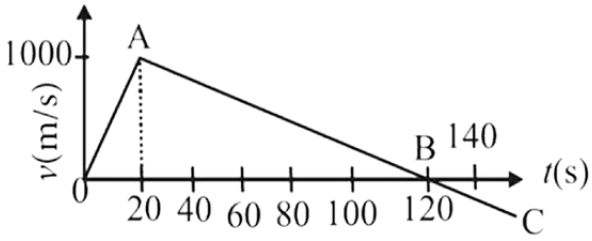
Q6 A rocket is launched upward from the earths surface whose velocity time graphs shown in figure. Then maximum height attained by the rocket is:



(A) $1\ \mathrm{km}$

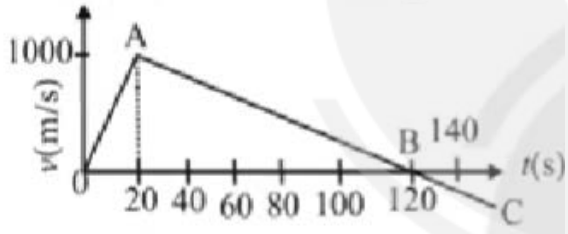
(B) $10\ \text{km}$
(C) $100\ \text{km}$
(D) $60\ \text{km}$

Q7 A rocket is launched upward from the earth's surface whose velocity time graphs shown in figure. Height covered by the rocket before retardation is



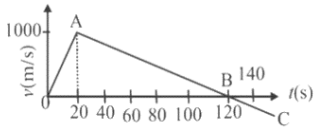
(A) $1\ \text{km}$
(B) $10\ \text{km}$
(C) $20\ \text{km}$
(D) $60\ \text{km}$

Q8 A rocket is launched upward from the earths surface whose velocity time graphs shown in figure .calculate mean. velocity of rocket during the time it took to attain the maximum height:



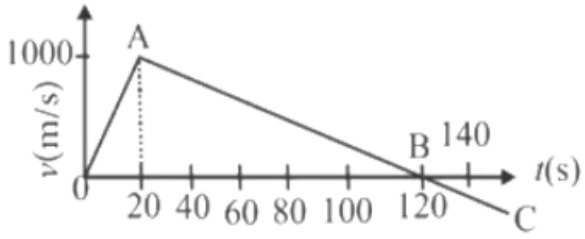
(A) $100\ \text{m/s}$
(B) $50\ \text{m/s}$
(C) $500\ \text{m/s}$
(D) $25/3\ \text{m/s}$

Q9 A rocket is launched upward from the earths surface whose velocity time graphs shown in figure. The retardation of rocket is



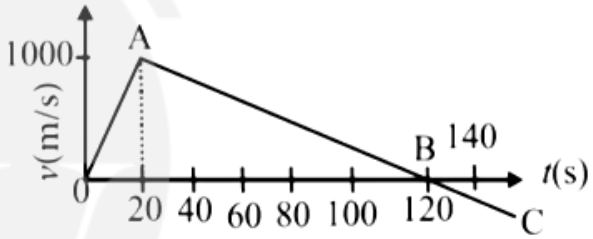
(A) $50\ \text{m/s}^2$
(B) $100\ \text{m/s}^2$
(C) $500\ \text{m/s}^2$
(D) $10\ \text{m/s}^2$

Q10 A rocket is launched upward from the earths surface whose velocity time graphs shown in figure. The acceleration of rocket is



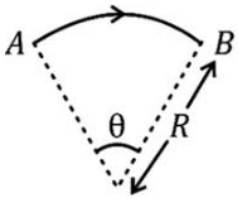
(A) $50\ \text{m/s}^2$
(B) $100\ \text{m/s}^2$
(C) $10\ \text{m/s}^2$
(D) $1000\ \text{m/s}^2$

Q11 A rocket is launched upward from the earths surface whose velocity time graphs shown in figure. The rocket goes up and comes down on the following parts respectively:



(A) OA and AB
(B) AB and BC
(C) OA and ABC
(D) OAB and BC

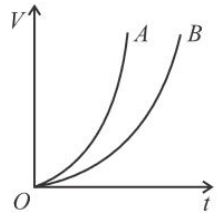
Q12 A body moves from A $\rightarrow$B along the path shown. Find distance & magnitude of displacement of body.



(A) Distance = Rθ, Displacement = 2Rsin (θ/2)
(B) Distance = Rθ, Displacement = 2Rcos (θ/2)
(C) Distance = 2Rsin (θ/2), Displacement = Rθ
(D) Distance = Rθ, Displacement = R(1 – cosθ)

Q13 A time–velocity graph of two vehicles *A* and *B* starting from rest at the same time is given in the

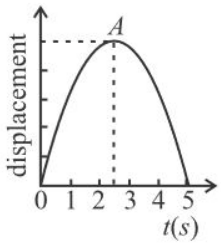
figure. The statement that can be deduced correctly from the graph is :



(A) Acceleration of *A* is greater than that of *B*
(B) Acceleration of *B* is greater than that of *A*
(C) Acceleration of *A* is increasing at a slower rate than that of *B*
(D) Velocity of *B* is greater than that of A.

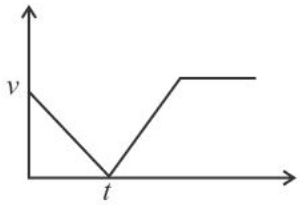
Q14 Mark the correct statement.
(A) The magnitude of the instantaneous velocity of a particle is equal to the instantaneous speed.
(B) The magnitude of average velocity in an interval is equal to its average speed in that interval.
(C) It is possible to have a situation in which the speed of a particle is always zero but the average speed is not zero.
(D) It is possible to have a situation in which the speed of a particle is never zero but the average speed in an interval is zero.

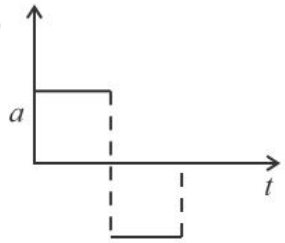
Q15 The figure shows the displacement–time graph of a body subject only to the force of gravity. The graph indicates that :

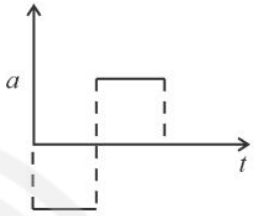


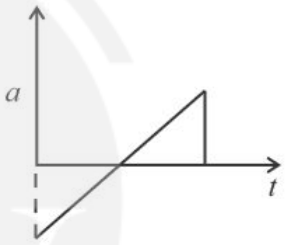
(A) At *A*, the acceleration is zero
(B) At *A*, the velocity is maximum
(C) At *A*, the displacement is zero
(D) The acceleration is constant for all times shown

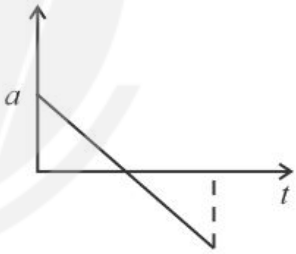
Q16 The velocity of a particle moving in straight line is given by the graph shown here. Then its acceleration is best represented by :



(A)


(B)


(C)


(D)


Q17 A body starts from rest and moves for *n* seconds with uniform acceleration *a*, its velocity after *n* seconds is *v*. The displacement of the body in last 3 seconds is:
(A) $\frac{v(6n-9)}{2n}$ (B) $\frac{2v(6n-9)}{n}$
(C) $\frac{2v(2n+1)}{n}$ (D) $\frac{2v(n-1)}{n}$

Answer Key

Q1	(C)
Q2	(A)
Q3	(D)
Q4	(D)
Q5	(A)
Q6	(D)
Q7	(B)
Q8	(C)
Q9	(D)
Q10	(A)
Q11	(D)
Q12	(A)
Q13	(B)
Q14	(A)
Q15	(D)
Q16	(B)
Q17	(A)