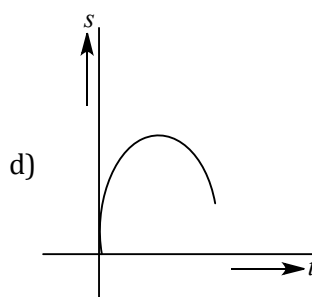
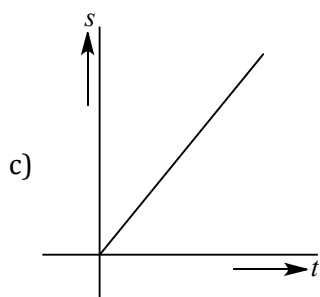
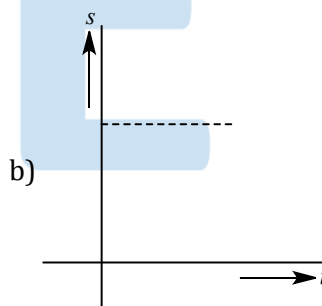
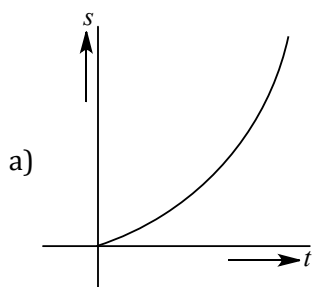


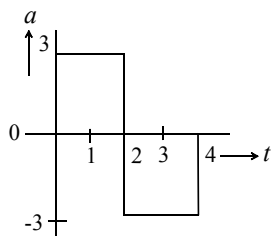
Topic :- MOTION IN A STRAIGHT LINE

- From the top of a tower two stones, whose masses are in the ratio 1:2 are thrown one straight up with an initial speed u and the second straight down with the same speed u . Then, neglecting air resistance
 - The heavier stone hits the ground with a higher speed
 - The lighter stone hits the ground with a higher speed
 - Both the stones will have the same speed when they hit the ground
 - The speed can't be determined with the give data
- A body is travelling in a straight line with a uniformly increasing speed. Which one of the plot represents the change in distance (s) travelled with time (t)?

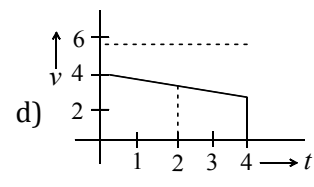
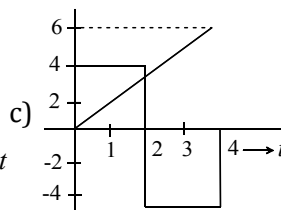
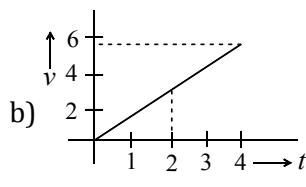
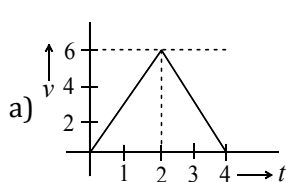


- A body is thrown vertically upwards. If air resistance is to be taken into account, then the time during which the body rises is
 - Equal to the time of fall
 - Less than the time of fall
 - Greater than the time of fall
 - Twice the time of fall

4. A body of 5 kg is moving with a velocity of 20 m/s . If a force of 100 N is applied on it for 10 s in the same direction as its velocity, what will now be the velocity of the body
 a) 200 m/s b) 220 m/s c) 240 m/s d) 260 m/s
5. A particle when thrown, moves such that it passes from same height at 2 and 10 s , the height is
 a) g b) $2g$ c) $5g$ d) $10g$
6. Two trains one of 100 m and another of length 125 m , are moving in mutually opposite directions along parallel lines, meet each other, each with speed 10 m/s . If their acceleration are 0.3 m/s^2 and 0.2 m/s^2 respectively, then the time taken to pass each other will be
 a) 5 s b) 10 s c) 15 s d) 20 s
7. A ball is dropped downwards. After 1 second another ball is dropped downwards from the same point. What is the distance between them after 3 seconds
 a) 25 m b) 20 m c) 50 m d) 9.8 m
8. A balloon rises from rest with a constant acceleration $g/8$. A stone is released from it when it has risen to height h . The time taken by the stone to reach the ground is
 a) $4\sqrt{\frac{h}{g}}$ b) $2\sqrt{\frac{h}{g}}$ c) $\sqrt{\frac{2h}{g}}$ d) $\sqrt{\frac{g}{h}}$
9. A particle starts from rest at $t = 0$ and undergoes an acceleration a in ms^{-2} with time t in seconds which is as shown

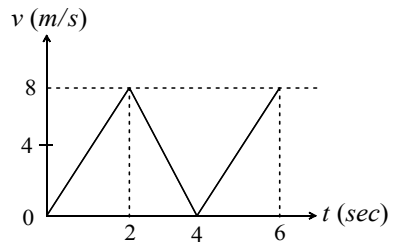


Which one of the following plot represents velocity V in ms^{-1} versus time t in seconds



10. The acceleration due to gravity on the planet A is 9 times the acceleration due to gravity on the planet B . A man jumps to a height of $2m$ on the surface of A . What is the height of jump by the same person on the planet B
- a) $18 m$ b) $6 m$ c) $\frac{2}{3} m$ d) $\frac{2}{9} m$
11. A parachutist after bailing out falls $50 m$ without friction. When parachute opens, it decelerates at $2 m/s^2$. He reaches the ground with a speed of $3 m/s$. At what height, did he bail out
- a) $293 m$ b) $111 m$ c) $91 m$ d) $182 m$
12. Two spheres of same size, one of mass $2 kg$ and another of mass $4 kg$, are dropped simultaneously from the top of Qutub Minar (height = $72m$). When they are $1 m$ above the ground, the two spheres have the same
- a) Momentum b) Kinetic energy c) Potential energy d) Acceleration
13. A boy walks to his school at a distance of $6km$ with constant speed of $2.5 km/hour$ and walks back with a constant speed of $4 km/hr$. His average speed for round trip expressed in $km/hour$, is
- a) $24/13$ b) $40/13$ c) 3 d) $1/2$
14. A car moving with a velocity of $10 m/s$ can be stopped by the application of a constant force F in a distance of $20 m$. If the velocity of the car is $30 m/s$. It can be stopped by this force in
- a) $\frac{20}{3} m$ b) $20 m$ c) $60 m$ d) $180 m$
15. One car moving on a straight road covers one third of the distance with $20 km/hr$ and the rest with $60 km/hr$. The average speed is
- a) $40 km/hr$ b) $80 km/hr$ c) $46\frac{2}{3} km/hr$ d) $36 km/hr$
16. A body starts from rest, with uniform acceleration. If its velocity after n seconds is v , then its displacement in the last two seconds is
- a) $\frac{2v(n+1)}{n}$ b) $\frac{v(n+1)}{n}$ c) $\frac{v(n-1)}{n}$ d) $\frac{2v(n-1)}{n}$
17. A packet is dropped from a balloon which is going upwards with the velocity $12 m/s$, the velocity of the packet after 2 seconds will be
- a) $-12 m/s$ b) $12 m/s$ c) $-7.6 m/s$ d) $7.6 m/s$

18. $v - t$ graph for a particle is as shown. The distance travelled in the first 4 s is



- a) $12m$ b) $16m$ c) $20m$ d) $24m$

19. A body, thrown upwards with some velocity, reaches the maximum height of $20m$. Another body with double the mass thrown up, with double initial velocity will reach a maximum height of

- a) $200 m$ b) $16 m$ c) $80 m$ d) $40 m$

20. A body is falling freely under gravity. The distances covered by the body in first, second and third minute of its motion are in the ratio

- a) $1 : 4 : 9$ b) $1 : 2 : 3$ c) $1 : 3 : 5$ d) $1 : 5 : 6$

PE