PRERNA EDUCATION
IIT-JEE | NEET | BOARDS | NTSE | KVPY | OLYMPIADS

Chapter 1 Motion in a Straight Line

Assignment 1

Class 11

PRERNA EDUCATION

DPP
DAILY PRACTICE PROBLEMS

CLASS : XITH **SUBJECT : PHYSICS**
DATE : **DPP NO. : 1**

Topic :-MOTION IN A STRAIGHT LINE

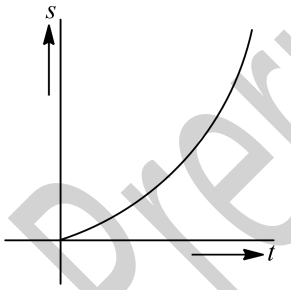
1. From the top of a tower two stones, whose masses are in the ratio 1: 2 are thrown one straight up with an initial speed u and the second straight down with the same speed u. Then, neglecting air resistance
   a) The heavier stone hits the ground with a higher speed

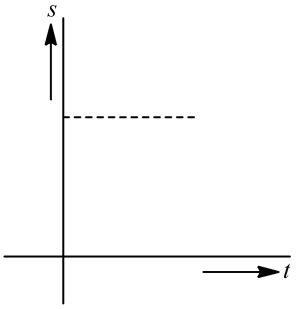
   b) The lighter stone hits the ground with a higher speed

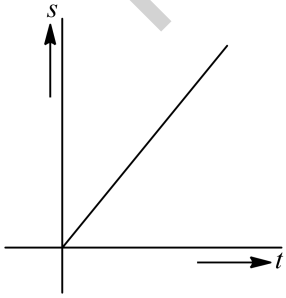
   c) Both the stones will have the same speed when they hit the ground

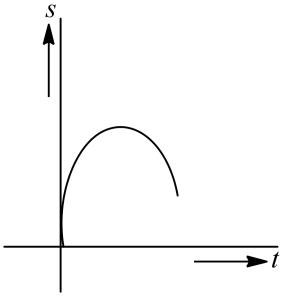
   d) The speed can't be determined with the give data

2. 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)


b)


c)


d)


3. A body is thrown vertically upwards. If air resistance is to be taken into account, then the time during which the body rises is

a) Equal to the time of fall
b) Less than the time of fall
c) Greater than the time of fall
d) Twice the time of fall

4. A body of 5 kg is moving with a velocity of $20m/s$. If a force of $100N$ is applied on it for $10s$ 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 $10s$, the height is

a) g b) $2g$ c) $5g$ d) $10g$

6. Two trains one of 100 m and another of length 125m, are moving in mutually opposite directions along parallel lines, meet each other, each with speed 10m/s.
If their acceleration are $0.3m/s^2$and $0.2m/s^2$respectively, then the time taken to pass each other will be

a) $5\ s$ b) $10\ s$ c) $15\ s$ d) $20\ s$

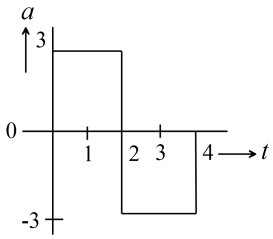
7. A ball is dropped downwards. After 1 second another ball is dropped downwards from the same point. What is the distance between them after 3 seconds

a) $25\ m$ b) $20\ m$ c) $50\ m$ d) $9.8\ m$

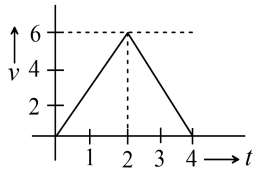
8. A balloon rises from rest with a constant acceleration $g/8$. A stone is released from it when it has risen to height h. The time taken by the stone to reach the ground is

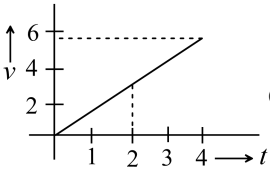
a) $4\sqrt{\frac{h}{g}}$ b) $2\sqrt{\frac{h}{g}}$ c) $\sqrt{\frac{2h}{g}}$ d) $\sqrt{\frac{g}{h}}$

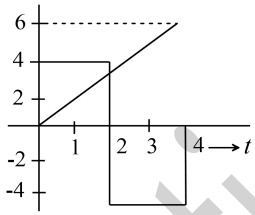
9. A particle starts from rest at $t = 0$ and undergoes an acceleration a in ms^{-2} with time t in seconds which is as shown

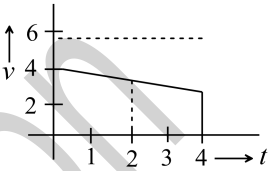


Which one of the following plot represents velocity V in ms^{-1} versus time t in seconds

a) 

b) 

c) 

d) 

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 mas 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) $36\ km/hr$

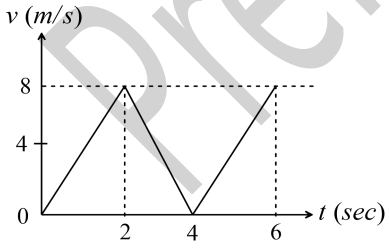
16. A body starts from rest, with uniform acceleration. If its velocity after n seconds is v,then its displacement in the last two seconds is

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

Space for Rough Work