DPP
DAILY PRACTICE PROBLEMS

CLASS : XITH **SUBJECT : PHYSICS**
DATE : **DPP NO. : 4**

Topic :-MOTION IN A STRAIGHT LINE

1. A truck and a car are moving with equal velocity. On applying the brakes both will stop after certain distance, then
   a) Truck will cover less distance before rest b) Car will cover less distance before rest
   c) Both will cover equal distance d) None

2. A body freely falling from the rest has a velocity $'v'$ after it falls through a height 'h'. The distance it has to fall down for its velocity to become double, is
   a) $2h$ b) $4h$ c) $6h$ d) $8h$

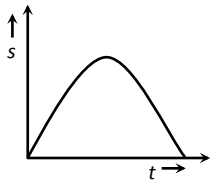
3. Two trains travelling on the same track are approaching each other with equal speeds of $40 m/s$. The drivers of the trains begin to decelerate simultaneously when they are just $2.0 km$ apart. Assuming the decelerations to be uniform and equal, the value of the deceleration to barely avoid collision should be
   a) $11.8\ m/s^2$ b) $11.0\ m/s^2$ c) $2.1\ m/s^2$ d) $0.8\ m/s^2$

4. The numerical ratio of displacement to the distance covered is always
   a) Less than one b) Equal to one
   c) Equal to or less than one d) Equal to or greater than one

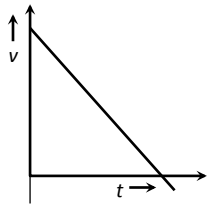
5. A student is standing at a distance of 50 m from the bus. As soon as the bus begins its motion with an acceleration of 1 ms^{-2}, the students starts running towards the bus with a uniform velocity u. Assuming the motion to be along a straight road, the minimum value of u, so that the student is able to catch the bus is
   a) 8 ms^{-1} b) 5 ms^{-1} c) 12 ms^{-1} d) 10 ms^{-1}

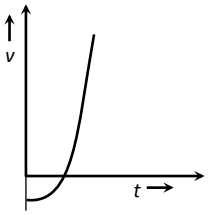
6. A cat moves from X to Y with a uniform speed v_u and returns to X with a uniform speed v_d. The average speed for this ground trip is
   a) $-\frac{2v_dv_u}{v_d+v_u}$ b) $\sqrt{v_uv_d}$ c) $\frac{v_dv_u}{v_d+v_u}$ d) $\frac{v_u+v_d}{2}$

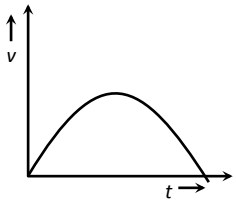
7. The graph of displacement v/s time is

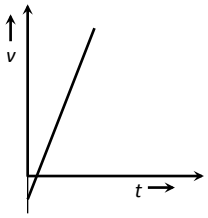


Its corresponding velocity-time graph will be

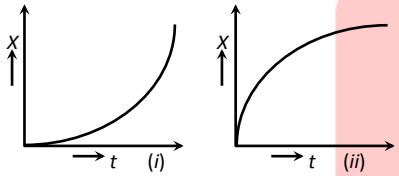
a) 

b) 

c) 

d) 

8. Figures (i) and (ii) below show the displacement-time graphs of two particles moving along the x-axis. We can say that



a) Both the particles are having a uniformly accelerated motion
b) Both the particles are having a uniformly retarded motion
c) Particle (i) is having a uniformly accelerated motion while particle (ii) is having a uniformly retarded motion
d) Particle (i) is having a uniformly retarded motion while particle (ii) is having a uniformly accelerated motion

9. Consider the acceleration, velocity and displacement of a tennis ball as it falls to the ground and bounces back. Directions of which of these changes in the process

a) Velocity only
b) Displacement and velocity
c) Acceleration, velocity and displacement
d) Displacement and acceleration

10. A lift in which a man is standing, is moving upward with a speed of $10 ms^{-1}$. The man drops a coin from a height of 4.9m and if $g = 9.8\ ms^{-2}$, then the coin reaches the floor of the lift after a time

a) $\sqrt{2}$s
b) 1 s
c) $\frac{1}{2}$ s
d) $\frac{1}{\sqrt{3}}$ s

11. Two balls are dropped to the ground from different heights. One ball is dropped $2s$ after the other but they both strike the ground at the same time. If the first ball takes $5s$ to reach the ground, then the difference in initial heights is ($g = 10\ ms^{-2}$)

a) $20m$ b) $80m$ c) $170m$ d) $40m$

12. The displacement of a particle starting from rest ($at\ t = 0$) is given by $s = 6t^2 - t^3$. The time in seconds at which the particle will attain zero velocity again, is
a) 2 b) 4 c) 6 d) 8

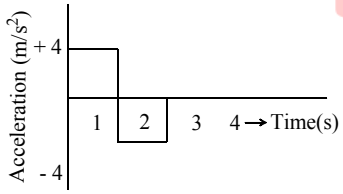
13. A body falls from rest in the gravitational field of the earth. The distance travelled in the fifth second of its motion is ($g = 10\ m/s^2$)
a) $25m$ b) $45m$ c) $90m$ d) $125m$

14. A body is moving with uniform acceleration covers 200 m in the first 2 s and 220 m in the next 4 s. find the velocity in ms^{-1} after 7 s.
a) 10 b) 15 c) 20 d) 30

15. A ball is dropped on the floor from a height of 10m. It rebounds to a height of 2.5m. If the ball is in contact with the floor for 0.01 s, the average acceleration during contact is nearly [Take $g = 10ms^{-2}$]
a) $500\sqrt{2}$ ms^{-2}upwards b) 1800 ms^{-2}downwards
c) $1500\sqrt{5}$ ms^{-2}upwards d) $1500\sqrt{2}$ ms^{-2}downwards

16. A ball is thrown vertically upwards with an initial velocity 1.4 ms^{-1} returns in 2 s. The total displacement of the ball will be
a) 22.4 m b) Zero c) 33.6 d) 44.8 m

17. A particle starts from rest at $t = 0$ and moves in a straight line with an acceleration as shown below. The velocity of the particle at $t = 3s$ is



a) 2 ms^{-1} b) 4 ms^{-1} c) 6 ms^{-1} d) 8 ms^{-1}

18. A bus begins to move with an acceleration of $1ms^{-2}$. A man who is $48m$ behind the bus starts running at 10 ms^{-1} to catch the bus. The man will be able to catch the bus after
a) $6s$ b) $5s$ c) $3s$ d) $8s$

19. A truck and a car are moving with equal velocity. On applying the brakes both will stop after certain distance, then
a) Truck will cover less distance before rest b) Car will cover less distance before rest
c) Both will cover equal distance d) None

20. Velocity of a body on reaching the point from which it was projected upwards, is
a) $v = 0$ b) $v = 2u$ c) $v = 0.5u$ d) $v = u$