DPP
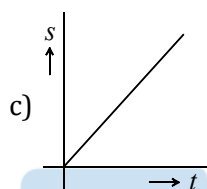**DAILY PRACTICE PROBLEMS**

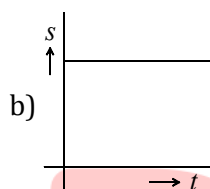CLASS : XITH   SUBJECT : PHYSICS
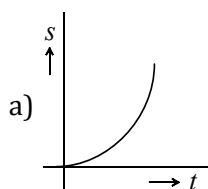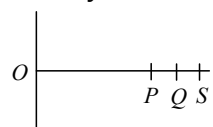DATE :   DPP NO. : 6

## Topic :-MOTION IN A STRAIGHT LINE

1. A body is travelling in a straight line with a uniformly increasing speed. Which one of the plot represents the changes in distance (s) travelled with time (t)
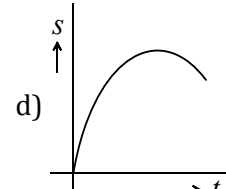
2. A stone is shot straight upward with a speed of $20\ m/sec$ from a tower $200\ m$ high. The speed with which it strikes the ground is approximately
   a) $60\ m/sec$ b) $65\ m/sec$ c) $70\ m/sec$ d) $75\ m/sec$

3. A stone dropped from of the tower touches the ground in $4\ sec$. The height of the tower is aboout
   a) $80\ m$ b) $40\ m$ c) $20\ m$ d) $160\ m$

4. A wheel of radius $1\ m$ rolls forward half a revolution on a horizontal ground. The magnitude of the displacement of the point of wheel initially in contact with the ground is
   a) 2π
   b) $\sqrt{2}\pi$
   c) $\sqrt{\pi^2 + 4}$
   d) π

5. Two stones of equal masses are dropped from a rooftop of height h one after another. Their separation distance against time will
   a) Remain the same   b) Increase   c) Decrease   d) Be zero

6. If the velocity of a particle is $(10 + 2t^2)m/s$, then the average acceleration of the particle between $2s$ and $5s$ is
   a) $2m/s^2$ b) $4m/s^2$ c) $12m/s^2$ d) $14m/s^2$

7. A train of 150 m length is going towards north direction at a speed of 10m/sec. A parrot flies at the speed of 5 m/sec towards south direction parallel to the railway track. The time taken by the parrot to cross the train is
   a) 12 sec b) 8 sec c) 15 sec d) 10 sec

8. The engine of motorcycle can produce a maximum acceleration 5 m/s^2. Its brakes can produce a maximum retardation 10 m/s^2. What is the minimum time in which it can over a distance of
   1.5 km
   a) 30 sec b) 15 sec c) 10 sec d) 5 sec

9. A stone dropped from of the tower touches the ground in 4 sec. The height of the tower is aboout
   a) 80 m b) 40 m c) 20 m d) 160 m

10. A police jeep is chasing with velocity of 45 km/h a thief in another jeep moving with velocity 153 km/h. Police fires a bullet with muzzle velocity of 180 m/s. The velocity with which it will strike the car of the thief is
    a) 150 m/s b) 27 m/s c) 450 m/s d) 250 m/s

11. A body having uniform acceleration of 10ms^{-2} has a velocity of 100ms^{-1}. In what time, the velocity will be doubled?
    a) 8 s   b) 10 s   c) 12 s   d) 14 s

12. A bullet is fired with a speed of 1000 m/sec in order to hit a target 100 m away. If $g = 10\ m/s^2$, the gun should be aimed
    a) Directly towards the target   b) 5 cm above the target
    c) 10 cm above the target   d) 15 cm above the target

13. A particle is moving with uniform acceleration along a straight line. The average velocity of the particle from P to Q is 8ms^{-1} and that from Q to S is 12ms^{-1}. If $QS - PQ$, then the average velocity from P to S is

    a) 9.6ms^{-1} b) 12.87 ms^{-1} c) 64 ms^{-1} d) 327 ms^{-1}

14. The displacement of a body is given by $2s = \text{g}t^2$, where g is a constant. The velocity of the body at any time t is
    a) gt b) $\dfrac{\text{g}t}{2}$ c) $\dfrac{\text{g}t^2}{2}$ d) $\dfrac{\text{g}t^3}{2}$

15. A body begins to walk eastward along a street in front of his house and the graph of his position from home is shown in the following figure. His average speed for the whole time interval is equal to
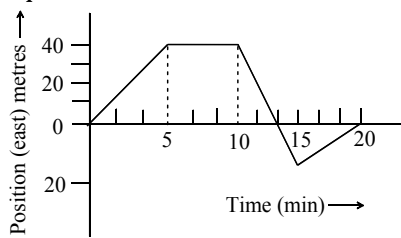
a) $8\ m/min$ b) $6\ m/min$ c) $\dfrac{8}{3}\ m/min$ d) $2\ m/min$

16. Which of the following options is correct for the object having a straight line motion represented by the following graph
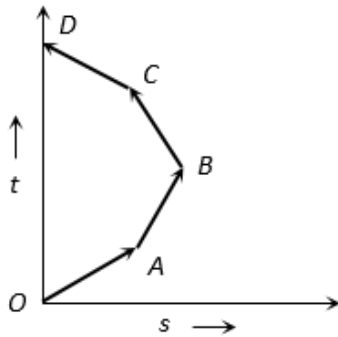
a) The object moves with constantly increasing velocity from O to A and then it moves with constant velocity
b) Velocity of the object increases uniformly
c) Average velocity is zero
d) The graph shown is impossible

17. A ball which is at rest is dropped from a height h metre. As it bounces off the floor its speed is 80% of what it was just before touching the ground. The ball then rise to nearly a height
a) $0.94\ h$ b) $0.80\ h$ c) $0.75\ h$ d) $0.64\ h$

18. A point starts moving in a straight line with a certain acceleration. At a time t after beginning of motion the acceleration suddenly becomes retardation of the same value. The time in which the point returns to the initial point is
a) $\sqrt{2t}$ b) $(2+\sqrt{2})t$
c) $\dfrac{t}{\sqrt{2}}$ d) Cannot be predicted unless acceleration is given

19. An elevator car, whose floor to ceiling distance is equal to $2.7m$, starts ascending with constant acceleration of $1.2ms^{-2}$. $2\ sec$ after the start, a bolt begins falling from the ceiling of the car. The free fall time of the bolt is
a) $\sqrt{0.54}s$ b) $\sqrt{6}\ s$ c) $0.7\ s$ d) $1\ s$

20. A man walks on a straight road from his home to a market 2.5 km away with a speed of 5 km/h. Finding the market closed, he instantly turns and walks back home with a speed of 7.5 km/h. The average speed of the man over the interval of time 0 to 40 min. Is equal to

a) 5 km/h b) $\frac{25}{4}$ km/h c) $\frac{30}{4}$ km/h d) $\frac{45}{8}$ km/h