DPP
DAILY PRACTICE PROBLEMS

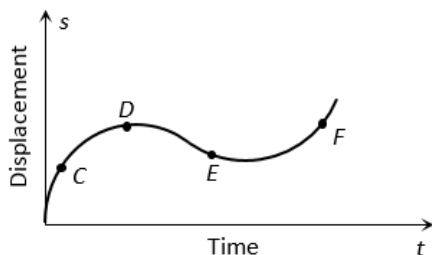| CLASS : XITH	SUBJECT : PHYSICS
DATE :	DPP NO. : 8

Topic :-MOTION IN A STRAIGHT LINE

1. The distance travelled by an object along a straight line in time t is given by $s = 3 - 4t + 5t^2$, the initial velocity of the object is
   a) 3 unit
   b) -3 unit
   c) 4 unit
   d) -4 unit

2. The displacement-time graph of moving particle is shown below

   The instantaneous velocity of the particle is negative at the point
   a) D
   b) F
   c) C
   d) E

3. Spotting a police car, you brake a parsche from a speed of 100kmh^{-1} to a speed of 80.0 kmh^{-1} during a displacement of 88.0m, at a constant acceleration. What is the acceleration?
   a) -2.5ms^{-2}
   b) 1.58 ms^{-2}
   c) -1.58ms^{-2}
   d) 2.5 ms^{-2}

4. An aircraft is flying at a height of $34000m$ above the ground. If the angle subtended at a ground observation point by the aircraft positions $10s$ apart is 30°, then the speed of the aircraft is
   a) $19.63 ms^{-1}$
   b) $1963 \ ms^{-1}$
   c) $108 \ ms^{-1}$
   d) $196.3 \ ms^{-1}$

5. A particle is projected up with an initial velocity of $80 \ ft/sec$. The ball will be at a height of $96 \ ft$ from the ground after
   a) 2.0 and 3.0 sec
   b) Only at 3.0 sec
   c) Only at 2.0 sec
   d) After 1 and 2 sec

6. A ball A is thrown up vertically with speed u and at the same instant another ball B is released from a height h. At time t, the speed of A relative to B is
   a) u
   b) $2u$
   c) u - gt
   d) $\sqrt{(u^2 - gt)}$

7. A body is moving in a straight line a shown in velocity-time graph. The displacement and distance travelled by in 8s are respectively
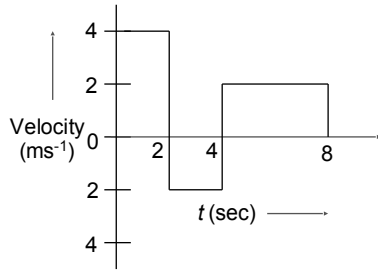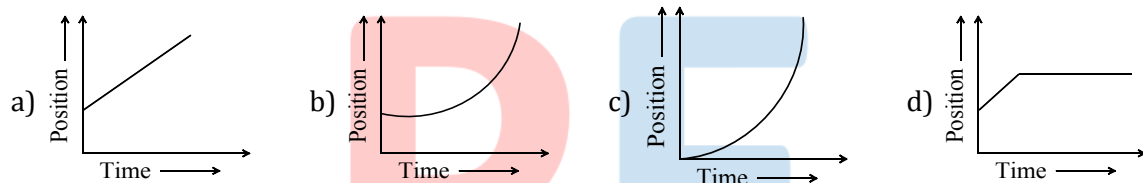

a) 12 m, 20 m b) 20m, 12 m c) 12 m, 12 m d) 20 m, 20 m

8. The velocity-time and acceleration-time graphs of a particle are given as
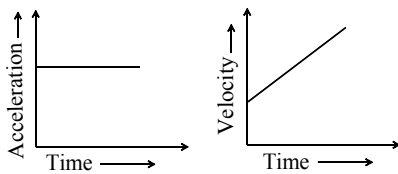
Its position-time graph may be given as

a)   b)   c)   d)

9. A stone thrown upward with a speed u from the top of the tower reaches the ground with a velocity $3u$. The height of the tower is

a) $3u^2/g$ b) $4u^2/g$ c) $6u^2/g$ d) $9u^2/g$

10. A particle is projected with velocity v_0 along x - $axis$. The deceleration on the particle is proportional to the square of the distance from the origin i.e., $a = -ax^2$. The distance at which the particle stops is

a) $\sqrt{\dfrac{3v_0}{2\alpha}}$ b) $\left(\dfrac{3v_0}{2\alpha}\right)^{\frac{1}{3}}$ c) $\sqrt{\dfrac{3v_0^2}{2\alpha}}$ d) $\left(\dfrac{3v_0^2}{2\alpha}\right)^{\frac{1}{3}}$

11. A ball is thrown vertically upwards with a velocity of 25 ms^{-1} from the top of a tower of height 30 m. How long will it travel before it hits ground?
a) 6 s   b) 5 s   c) 4 s   d) 12 s

12. The motion of a particle along a straight line is described by equation :
    $x = 8 + 12t - t^3$
    Where x is in metre and t in second. The retardation of the particle when its velocity becomes zero, is
    a) $24ms^{-2}$　　　　　b) Zero　　　　　c) $6ms^{-2}$　　　　　d) $12ms^{-2}$

13. A particle starting from rest falls from a certain height. Assuming that the value of acceleration due to gravity remains the same throughout motion, its displacement in three successive half second intervals are S_1 ,S_2, S_3.
    Then,
    a) S_1:S_2:S_3:1:5:9　　　　b) S_1:S_2:S_3:1:2:3　　　　c) S_1:S_2:S_3:1:1:1　　　　d) S_1:S_2:S_3:1:3:5

14. Two bodies are thrown simultaneously from a tower with same initial velocity v_0: one vertically upwards, the other vertically downwards. The distance between the two bodies after time t is
    a) $2v_0t + \frac{1}{2}gt^2$　　　　b) $2v_0t$　　　　c) $v_0t + \frac{1}{2}gt^2$　　　　d) v_0t

15. An aeroplane files $400\ m$ north and $300\ m$ south and then files $1200\ m$ upwards then net displacement is
    a) $1200\ m$　　　　b) $1300\ m$　　　　c) $1400\ m$　　　　d) $1500\ m$

16. A particle moving in a straight line with uniform acceleration is observed to be a distance a from a fixed point initially. It is at distances b,c,d from the same point after n,$2n$,$3n$ second. The acceleration of the particle is
    a) $\dfrac{c - 2b + a}{n^2}$　　　　b) $\dfrac{c + b + a}{9n^2}$　　　　c) $\dfrac{c + 2b + a}{4n^2}$　　　　d) $\dfrac{c - b + a}{n^2}$

17. The three initial and final position of a man on the x - axis are given as
    (i) $(-8m, 7m)$ (ii) $(7m, -3m)$ and (iii) $(-7m, 3m)$
    Which pair gives the negative displacement
    a) (i)　　　　b) (ii)　　　　c) (iii)　　　　d) (i) and (iii)

18. A ball is dropped vertically from a height d above the ground. It hits the ground and bounces up vertically to a height $d/2$. Neglecting subsequent motion and air resistance, its velocity v varies with the height ɦ above the ground as

a)

b)

c)

d)
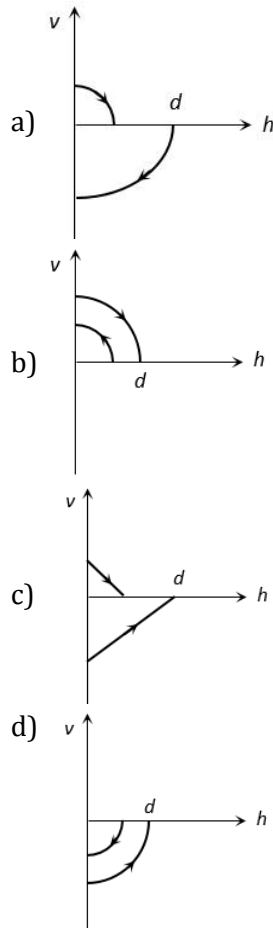
19. The displacement of a particle is given by $y = a + bt + ct^2 - dt^4$. The initial velocity and acceleration are respectively

a) $b, -4d$ b) $-b, 2c$ c) $b, 2c$ d) $2c, -4d$

20. Four marbles are dropped from the top of a tower one after the other with an interval of one second. The first one reaches the ground 4 seconds. When the first one reaches the ground the distances between the first and second, the second and third and the third and forth will be respectively

a) 35,25 and 15 m b) 30,20 and 10 m c) 20,10 and 5 m d) 40,30 and 20 m