1. Two balls are projected simultaneously from the top of a tall building, one vertically upward and other vertical downwards with the same speed of 60 m/s. Then time interval between the balls striking the ground is :-
(A) 6 sec (B) 10 sec (C) 12 sec (D) 9 sec

2. A ball is thrown vertically upwards from the ground. It crosses a point at the height of 25 m twice at an interval of 4 secs. The ball was thrown with the velocity of
(A) 20m/sec. (B) 25 m/sec. (C) 30m/sec. (D) 35 m/sec.

3. The position vector of a particle is given by $\vec{r} = 10\hat{i} + (20 - 5t)\hat{j}$ (m) where t is in seconds and $\vec{r}$ is in meters. Choose the correct statement(s) :
(A) Velocity of particle is of magnitude 10 m/s
(B) Velocity of particle is of magnitude 5 m/s
(C) Direction of motion of particle is parallel to x-axis
(D) Direction of motion of particle is perpendicular to x-axis.

Paragraph for Question no. 4 to 7

Two balls A and B are thrown with same velocity u from the top of a tower. Ball A is thrown vertically upwards and the ball B is thrown vertically downwards.

4. Choose the correct statement
(A) Ball B reaches the ground with greater velocity
(B) Ball A reaches the ground with greater velocity
(C) Both the balls reach the ground with same velocity
(D) Cannot be interpreted

5. If t_A and t_B are the respective times taken by the balls A and B respectively to reach the ground, then identify the correct statement
(A) $t_A > t_B$ (B) $t_A = t_B$
(C) $t_A < t_B$ (D) Cannot be interpreted

6. If $t_A = 6$ s and $t_B = 2$ s, then the height of the tower is
(A) 80 m (B) 60 m (C) 45 m (D) none of these

7. The velocity u of each ball is
(A) 10 ms^{-1} (B) 15 ms^{-1} (C) 20 ms^{-1} (D) none of these

Paragraph for Question no. 8 and 9

During a cycle race, two persons happen to cross a point x simultaneously with speeds 16 m/sec and 12m/sec respectively. In order to win the race they increase their speeds at the rate 1 m/s^2 and 2 m/s^2 respectively. Unfortunately both reach the final point y at the same instant of time.

8. If the time required to cover the distance xy is t then :
(A) t = 4 sec (B) t = 6 sec (C) t = 8 sec (D) t = 10 sec

9. Find the distance xy :-
(A) xy = 120 m (B) xy = 160 m (C) xy = 100 m (D) xy = 80 m

Paragraph for Question No. 10 and 11

A ball is dropped from a balloon moving upwards at constant speed 10 m/s when it is at height 75 m from ground.

10. Time taken by ball to fall on ground is:-
(A) t = 4 sec (B) t = 5 sec (C) 6 sec (D) 7 sec

11. Height of balloon when ball reaches the ground is:-
(A) 80 m (B) 125 m (C) 130 m (D) 160 m

N_Race # 16			ANSWER KEY
1. Ans. (C)	**2. Ans. (C)**	**3. Ans. (B, D)**	**4. Ans. (C)**
5. Ans. (A)	**6. Ans. (B)**	**7. Ans. (C)**	**8. Ans. (C)**
9. Ans. (B)	**10. Ans. (B)**	**11. Ans. (B)**	