

EXERCISE-1**MOTION IN STRAIGHT LINE**

- Q.1 A body moves 6 m north, 8 m east and 10m vertically upwards, what is its resultant displacement from initial position
- (1) $10\sqrt{2}$ m (2) 10 m (3) $\frac{10}{\sqrt{2}}$ m (4) 10×2 m
- Q.2 An athlete completes one round of a circular track of radius R in 40 seconds. What will be his displacement at the end of 2 minutes 20 seconds
- (1) Zero (2) 2R (3) $2\pi R$ (4) $7\pi R$
- Q.3 A boy stops after travelling 3 km towards east and then goes 4 km towards north along a plane road. The resultant displacement of the boy is
- (1) 7 km (2) 4 km (3) 5 km (4) 15 km
- Q.4 If the displacement of a particle is zero, then what can we say about its distance covered
- (1) It must be zero (2) It cannot be zero
(3) It is negative (4) It may or may not be zero
- Q.5 The location of a particle has changed. What can we say about the displacement and the distance covered by the particle
- (1) Both cannot be zero
(2) One of the two may be zero
(3) Both must be zero
(4) If one is positive, the other is negative and vice versa
- Q.6 The ratio of the numerical values of the average velocity and average speed of a body is always
- (1) Unity (2) Unity or less (3) Unity or more (4) Less than unity
- Q.7 A particle moves along a semicircle of radius 10m in 5 seconds. The velocity of the particle is
- (1) $2\pi \text{ ms}^{-1}$ (2) $4\pi \text{ ms}^{-1}$ (3) 2 ms^{-1} (4) 2 ms^{-1}
- Q.8 A 150 m long train is moving with a uniform velocity of 45 km/h. The time taken by the train to cross a bridge of length 850 meters is
- (1) 56 sec (2) 68 sec (3) 80 sec (4) 92 sec
- Q.9 A car moves for half of its time at 80 and for rest half of time at 40. Total distance covered is 60. What is the average speed of the car
- (1) 60 km/h (2) 80 km/h (3) 120 km/h (4) 180 km/h
- Q.10 A particle moves along x-axis in such a way that its coordinate x varies with time t according to the equation $x = 2 - 5t$. The initial velocity of the particle is
- (1) -5 m/s (2) 6 m/s (3) -3 m/s (4) 3 m/s
- Q.11 A car travels a distance of 2000 m. If the first half distance is covered at 40 and the second half with speed v and the average speed is 48 then the value of v is
- (1) 56 (2) 60 (3) 50 (4) 48
- Q.12 A car travels a distance S on a straight road in two hours and then returns to the starting point in the next three hours. Its average velocity is

- (1) S/5 (2) 2S / 5 (3) S/2 + S/3 (4) None of the above

Q.13 When a particle moves with uniform velocity, which of the following relations are correct

- (I) Average speed = average velocity
 (II) Instantaneous speed = instantaneous velocity
 (III) Distance covered = magnitude of displacement

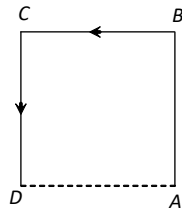
- (1) I, II, III (2) I, II (3) II, III (4) I, III

Q.14 When a particle moves with variable velocity, which of the following statements are not correct

- (I) Average speed = average velocity
 (II) Instantaneous speed = instantaneous velocity
 (III) Distance covered = magnitude of displacement

- (1) I, II, III (2) I, II (3) II, III (4) I, III

Q.15 A particle moves along the sides AB, BC, CD of a square of side 25 m with a velocity of 15 ms^{-1} . Its average velocity is



- (1) 15 ms^{-1} (2) 10 ms^{-1} (3) 7.5 ms^{-1} (4) 5 ms^{-1}

Q.16 A body has speed V , $2V$ and $3V$ in first $1/3$ of distance S , second $1/3$ of S and third $1/3$ of S respectively. Its average speed will be

- (1) V (2) $2V$ (3) $\frac{18}{11}V$ (4) $\frac{11}{18}V$

Q.17 A particle moves along a straight line such that its displacement at any time t is given by $S = t^3 - 6t^2 + 3t + 4$ meter. The velocity when the acceleration is zero is

- (1) 3 ms^{-1} (2) -12 ms^{-1} (3) 42 ms^{-1} (4) -9 ms^{-1}

Q.18 A body is moving according to the equation $x = at + bt^2 - ct^3$ where x = displacement and a , b and c are constants. The acceleration of the body is

- (1) $a + 2bt$ (2) $2b + 6ct$ (3) $2b - 6ct$ (4) $3b - 6ct^2$

Q.19 The displacement is given by $x = 2t^2 + t + 5$, the acceleration at $t = 2\text{s}$ is

- (1) 4 m/s^2 (2) 8 m/s^2 (3) 10 m/s^2 (4) 15 m/s^2

Q.20 The velocity of a body depends on time according to the equation $x = t^3$. The body is undergoing

- (1) Uniform acceleration (2) Uniform retardation
 (3) Non-uniform acceleration (4) Zero acceleration

ANSWER KEY

EXERCISE-1

Q.1	1	Q.2	2	Q.3	3	Q.4	4	Q.5	1
Q.6	2	Q.7	4	Q.8	3	Q.9	1	Q.10	1
Q.11	2	Q.12	4	Q.13	1	Q.14	4	Q.15	4
Q.16	3	Q.17	4	Q.18	3	Q.19	1	Q.20	3