CBSE

MOTION IN A STRAIGHT LINE WS 3

Class 11 - Physics

Section A

1. No force is required for an object to be in uniform motion because **[1]**

   a) its speed is constant
   b) its acceleration is constant
   c) its position vector is constant
   d) its velocity is constant

2. In uniform motion, magnitude of displacement is **[1]**

   a) less than distance
   b) greater or equal to distance
   c) greater than distance
   d) equal to distance

3. A 100 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 1 km is: **[1]**

   a) 78 s
   b) 68 s
   c) 58 s
   d) 88 s

4. **Assertion (A):** A bus moving due north takes a turn and starts moving towards the east at the same speed. There will be no change in the velocity of the bus. **[1]**
   Reason (R): Velocity is a vector quantity.

   a) Both A and R are true and R is the correct explanation of A.
   b) Both A and R are true but R is not the correct explanation of A.
   c) A is true but R is false.
   d) A is false but R is true.

5. **Assertion (A):** A body may have constant speed by variable velocity. **[1]**
   Reason (R): Speed is a scalar quantity but velocity is a vector quantity.

   a) Both A and R are true and R is the correct explanation of A.
   b) Both A and R are true but R is not the correct explanation of A.
   c) A is true but R is false.
   d) A is false but R is true.

6. **Assertion:** An object can have constant speed but variable velocity. **[1]**
   Reason: Speed is a scalar but velocity is a vector physical quantity.

   a) If both assertion and reason are true and the reason is the correct explanation of assertion.
   b) If both assertion and reason are true but the reason is not the correct explanation of assertion.
   c) If the assertion is true but the reason is false.
   d) If both assertion and reason are false.

7. **Assertion:** The displacement of a body may be zero, though distance can be finite. **[1]**
   Reason: If a body moves such that finally it arrives at the initial point, then the displacement is zero while distance is non-zero.

a) If both assertion and reason are true and the reason is the correct explanation of assertion.

b) If both assertion and reason are true but the reason is not the correct explanation of assertion.

c) If the assertion is true but the reason is false.

d) If both assertion and reason are false.

8. What is the nature of the velocity-time graph for uniform motion? **[1]**

9. What is the nature of the displacement time curve of a body moving with constant velocity? **[1]**

10. Can a body have zero velocity and still be accelerating? **[1]**

11. What is uniform motion? Give examples. **[1]**

12. What is the numerical ratio of velocity to speed of an object? **[1]**

13. Under what condition the displacement and the distance of a moving object will have the same magnitude? **[1]**

14. Draw position-time graph for a non-uniform motion, when the body starts from origin with increasing velocity. **[1]**

15. State the condition when the magnitude of velocity and speed of an object are equal. **[1]**

16. Can the speed of a body be negative? **[1]**

Section B

17. How does the velocity-time graph for uniform motion gives a geometrical way of calculating the displacement covered during a given time t? **[2]**

18. The data regarding the motion of two different objects P and Q are given in the following table. Examine them carefully and state whether the motion of the objects is uniform or non-uniform. **[2]**

Time	**Distance travelled by object P (in m)**	**Distance travelled by Object Q (in m)**
9:30 am	10	12
9:45 am	20	19
10:00 am	30	23
10:15 am	40	35
10:30 am	50	37
10:45 am	60	41
11:00 am	70	44

Section C

19. **Fill in the blanks:** **[3]**

(a) When a body moves with a _____, then $v_{av} = v_{inst}$. **[1]**

(b) If the change in velocity of an object in each unit of time is constant, then the object is said to be moving with constant acceleration and such a motion is called _____ motion. **[1]**

(c) The motion in which a particle moves to and fro about a given point is known as _____. **[1]**

20. Give example of a motion where $x > 0$, $v < 0$ and $a > 0$ at a particular instant. **[3]**