CBSE

MOTION WS 2

Class 09 - Science

Section A

1. A ball is thrown up with a velocity of 20 ms^{-1}. What is the time of flight, neglecting air resistance? **[1]**

   a) 8 sec
   b) 1 sec
   c) 2 sec
   d) 4 sec

2. What is the slope of the body when it moves with uniform velocity? **[1]**

   a) positive
   b) zero
   c) may be positive or negative
   d) negative

3. If the velocity of a body is reducing, it is said to have **[1]**

   a) Retardation
   b) Both Negative acceleration and Retardation
   c) Negative acceleration
   d) Positive acceleration

4. Usha swims in a 90 m long pool. She covers 180 m in one minute going either way. The average velocity is: **[1]**

   a) $30ms^{-1}$
   b) zero
   c) $180ms^{-1}$
   d) $90ms^{-1}$

5. **Assertion (A):** A tiger can accelerate from rest at the rate of 4 m/s^2. **[1]**
   Reason (R): The velocity attained by it in 10s is 40 m/s.

   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 (A):** If a particle is moving with constant velocity, then the average velocity for any time interval is equal to instantaneous velocity. **[1]**
   Reason (R): If average velocity of a particle moving on a straight line is zero for a given time interval, then instantaneous velocity at some instant within this interval may be zero.

   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.

7. **Assertion (A):** Motion with uniform velocity is always along a straight-line path. **[1]**
   Reason (R): In uniform velocity a motion, speed is the magnitude of the velocity and is equal to the instantaneous velocity.

   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.

8. **Assertion (A):** The speedometer of an automobile measure the average speed of the automobile. **[1]**

Reason (R): Average velocity is equal to total displacement per total time-taken.

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.

9. **Assertion (A):** An object may have acceleration even if it is moving with uniform velocity. **[1]**

Reason (B): An object may be moving with uniform velocity but it may be changing its direction of motion.

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.

10. **Assertion (A):** Velocity versus time graph of a particle in uniform motion along a straight path is a line parallel to the time axis. **[1]**

Reason (B): In uniform motion the velocity of a particle increases as the square of the time elapsed.

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.

11. **Fill in the blanks:** **[1]**

(a) A body is said to possess _____ if it travels in a straight line and its velocity increases or decreases by equal amounts in equal intervals of time. **[1]**

12. A car travels 100 km east and then 100 km south. Finally, it comes back to the starting point by the southeast route. Throughout the journey, the speed is constant at 60 km h^{-1}. The average velocity for the whole journey if the time taken is 3.3 hours is **[1]**

a) 90 kmh^{-1}

b) 60 kmh^{-1}

c) 180 kmh^{-1}

d) 0 kmh^{-1}

13. Define average velocity. **[1]**

14. What do you understand by a uniform velocity? **[1]**

15. What does the path of an object look like when it is in uniform motion? **[1]**

16. Define the term "velocity". **[1]**

17. What is the relation between linear velocity and angular velocity? **[1]**

Section B

18. A body is moving with a uniform velocity of 10 ms^{-1}. Find its velocity after 10 s? **[2]**

19. Distinguish between terms speed and velocity. **[2]**

20. The velocity of a car is 18 ms^{-1}. Express this velocity in kmh^{-1}. **[2]**

21. Under what condition(s) is the magnitude of average velocity of an object equal to its average speed? **[2]**

22. What is the difference between uniform velocity and non-uniform velocity? **[2]**

23. An artificial satellite is moving in a circular orbit of radius nearly 42,250 km. Calculate its linear velocity, if it takes 24 hour to revolve round the earth. **[2]**

24. What do you understand by a non-uniform velocity? **[2]**

25. Express average velocity when the velocity of a body changes at non-uniform rate and at uniform rate. **[2]**

Section C

26. **State True or False:** **[3]**

(a) During the uniform motion of an object along a straight line, the velocity remains constant with time. **[1]**

(b) The velocity of a body is defined as the distance traveled by the body in unit time. **[1]**

(c) The velocity of a body is defined as the distance traveled by the body in unit time in a given direction. **[1]**

Section D

27. Joseph jogs from one end A to the other end B of a straight 300 m road in 2 minutes 30 seconds and then turns around and jogs 100 m back to point C in another 1 minute. What are Joseph's average speed and velocity in jogging **[5]**

a. from A to B and

b. from A to C?

28. Distance travelled by train and the time taken by it is shown in the following table? **[5]**

i. Plot distance-time graph.

ii. What is the average speed of the train?

iii. When is the train travelling at the highest speed?

iv. At what distance does the train slow down?

v. Calculate the speed of the train between 10:40 AM to 11:00 AM.

Time	Distance (in km)
10 : 00 AM	0
10 : 30 AM	25
10 : 40 AM	28
11 : 00 AM	40
11 : 15 AM	42
11 : 30 AM	50