Octahedral classes, kharadi

2nd floor, yashwant plaza, near bank of India,

Class 09 - Science

Motion

Maximum Marks: 40   **Time Allowed: 1 hour and 30 minutes**

Section A

1. The phenomenon of motion was placed on a sound scientific footing by two scientists. Write their names.   **1**

2. How does the path of an object look graphically when it is in uniform motion?   **1**

3. Give an example of non-uniform acceleration?   **1**

4. What is the simplest type of motion?   **1**

5. What is negative acceleration?   **1**

6. Is displacement a scalar or a vector quantity?   **1**

7. What do you understand by a uniform velocity?   **1**

8. What is uniform acceleration?   **1**

9. Define average speed.   **1**

10. Define the term "speed".   **1**

11. Suppose you go up a tower 80 m high and throw a ball horizontally with a velocity of 20m/s. What will be the shape of the path followed by the ball? While falling, the motion of the ball will be a combination of two independent motions. Name these two motions.   **2**

12. A trolley, while going down an inclined plane, has an acceleration of 2 cm/s^2. What will be its velocity after 3 seconds?   **2**

13. An artificial satellite is moving in a circular orbit of radius 42250 km. Calculate its speed, if it takes 24 hours to revolve around the earth.   **2**

14. Obtain a relation for the distance travelled by an object moving with a uniform acceleration in the interval between 4th and 5th second.   **2**

15. A driver of a car travelling at 52 km h^{-1} applies the brakes and accelerates uniformly in the opposite direction. The car stops in 5 s. Another driver going at 3 km h^{-1} in another car applies his brakes slowly and stops in 10 s. On the same graph paper, plot the speed versus time graphs for the two cars. Which of the two cars travelled farther after the brakes were applied?   **2**

16. A bus decreases its speed from 80 kmh^{-1} to 60 kmh^{-1} in 5 s. Find the acceleration of the bus. **2**

17. A car moving with a certain velocity comes to a halt after travelling 62.5m at the retardation of 5m/s^2. Find the initial velocity of the car? **2**

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

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

20. Calculate acceleration and distance travelled by the body moving with the velocity of 5m/s and comes to rest after travelling for 6 sec. **2**

21. Derive the second equation of motion S= ut +at^2 graphically? **5**

22. The displacement - time graph for a body is given below. State whether the velocity and acceleration of the body in the region BC, CD, DE and EF are positive, negative or zero. **5**