Motion and Types of Motion

Solution 1:

The different types of motion are

1. Linear motion: Movement of ants in a line and movement of a bullock cart slowly in one direction are examples of linear motion.
2. Uniform linear motion: Soldiers marching in a parade and a car running at a constant speed along a straight path show uniform linear motion.
3. Non-uniform linear motion: A girl on a slide and running or walking at different intervals of time exhibit non-uniform linear motion.
4. Oscillatory motion: The movement of bird's wings and the movement of a swing show oscillatory motion.
5. Periodic motion: Motion of the Earth around the Sun and the movement of trapeze artists in a circus are examples of periodic motion.
6. Random motion: The motion of a baby crawling and the motion of football players on the field are examples of random motion.
7. Circular motion: The turning of the merry-go-round and the blades of an electric fan exhibit circular motion.

Solution 2:

The speed of an object is the distance it travels in a unit of time.

$$\text{Speed} = \frac{\text{Distance travelled}}{\text{Time taken to travel the distance}}$$

Solution 3:

Oscillatory motion: The back and forth repetitive motion is called oscillatory motion. A swing moves from one extreme position to another and back again. It takes the same time for every such complete swing. One complete swing is called an oscillation. The movement of a bird's wings is an example of oscillatory motion.

Periodic motion: When a moving object passes through a certain point at regular intervals of time, its motion is called periodic motion. Motion of the Earth around the Sun and the movement of trapeze artists in a circus are examples of periodic motion. In periodic motion, one round is completed in the same time every time.

Random motion: Motion whose direction changes continuously is called random motion. A butterfly flits from flower to flower. Its motion has no definite direction. Such a

motion is called random motion. The motion of a baby crawling and the motion of football players on the field are examples of random motion.

Circular motion: Motion along a circle is called circular motion. The turning of a merry-go-round and the blades of an electric fan exhibit circular motion.

Solution 4:

The movement of the hands of a clock exhibit periodic motion. The minutes hand completes one round in 60 minutes every time. Such regular motion is called periodic motion.

Solution 5:

1. An object that moves steadily in one direction has **uniform linear** motion.
2. A girl slipping fast down a slide has **linear** motion.
3. The unit of speed in the MKS system is **m/sec**.
4. The unit of speed in the CGS system is **cm/sec.**

Solution 6:

1. A car running on a road – km/h
2. An ant going along a straight line – cm/sec
3. The speed of a ball bowled by a bowler – km/h
4. The speed of a coin on a carom board – m/sec

Solution 7:

Motion	Example
Periodic	The motion of the hands of a clock The motion of the Moon moving around the Earth
Oscillatory	The motion of a bell
Circular	The motion of a bicycle wheel, the motion of a farmer's sling
Random	The motion of a butterfly, the motion of a football player

Solution 8:

(a) Random motion
(b) Periodic motion
(c) Speed