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MOTION

CHAPTER NO.2

SUB: PHYSICS

MOTION

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Types of Motion

Various objects can have different types of motion. They can be classified into translatory motion, rotatory motion, oscillatory motion, vibratory motion, periodic motion, non-periodic motion, uniform motion and non-uniform motion.

Translatory Motion

The motion in which all the particles of a body move through the same distance in the same time is called translatory motion. This is further classified into

a. Rectilinear motion
b. Curvilinear motion.

Examples for Translatory Motion

A train moving on a track, a parade, coins tossed in the air are all in rectilinear motion.

LEARNING OBJECTIVE

The students will be able to

- Describe different types of motion with example from daily life

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a. Rectilinear Motion

If a body moves along a straight line path, it is said to be in rectilinear motion.

Examples For Rectilinear Motion

• An athlete running on a straight path;

•A freely falling apple

b. Curvilinear Motion

If a body moves along a curved path, it is said to be in curvilinear motion.

Examples For Curvilinear Motion

•A car running on a curved road

•A stone thrown at an angle

Rotatory Motion

The motion in which a body moves about a fixed axis without changing the radius of its motion is called rotatory motion.

Examples For Rotatory Motion

- Potter's wheel
- A ceiling fan

Circular Motion

Circular motion is the movement of a body along a circular path. It is a special type of curvilinear motion. It is the motion of an object that moves at a fixed distance from a fixed point. Here, all objects rotate in circular motion. So, circular motion is motion in which the body traverses a circular path.

Examples For Circular Motion
The hands of a clock, a merry-go-round, the blades of a fan, the wheel of a moving vehicle, satellites, a spinning top, are all good examples of circular motion.

Oscillatory Motion

The to-and -fro or back and forth motion described by an object as a whole, along the same path, without any change in the shape of the object is called oscillatory motion.

Examples For Oscillatory Motion

- The pendulum of a clock
- A child on a swing.

Vibratory Motion

This is a kind of oscillatory motion in which the moving object undergoes change in shape or size. In this motion the body does not move as a whole.

Examples For Vibratory Motion

- The stretched membrane of a drum
- The plucked string of a guitar.

Periodic Motion

Periodic motion is the motion that repeats itself at regular intervals of time. Every object executing uniform circular motion can be said to be executing periodic motion.

Examples For Periodic Motion

- Earth revolving around the Sun.
- Needle of a sewing machine running at constant speed.
- The motion of the pendulum in a pendulum clock, the motion of a swinging cradle and the motion of the needle in a sewing machine are some examples of periodic motion.

Non - Periodic Motion

A repetitive motion which repeats itself at irregular intervals of time is called non-periodic motion. It cannot repeat itself at regular intervals of time. The different types of motion we observe in our daily need not be periodic.

Examples of bodies undergoing non-periodic motion:

(i) A footballer running on a field; (ii) tides in a sea.

Multiple Motion

Sometimes an object can display combinations of different types of motion.

Example

A moving car which moves straight on the road displays rectilinear motion but at the same time the wheels of the car which are moving in circles display circular motion. So a moving car displays both rectilinear and circular motion.

In a sewing machine, the needle is in periodic motion whereas the wheels of the sewing machine are in circular motion. So a sewing machine displays circular and periodic motions.

HOME ASSIGNMENT

1. What do you mean by translatory motion ? Give one example
2. Explain the meanings of (i) rectilinear motion, and (ii) curvilinear motion. Give one example of each.
3. What is rotatory motion ? Give two examples
4. What is meant by circular motion ? Give one example

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