

CLASS - VII

SUBJECT - PHYSICS

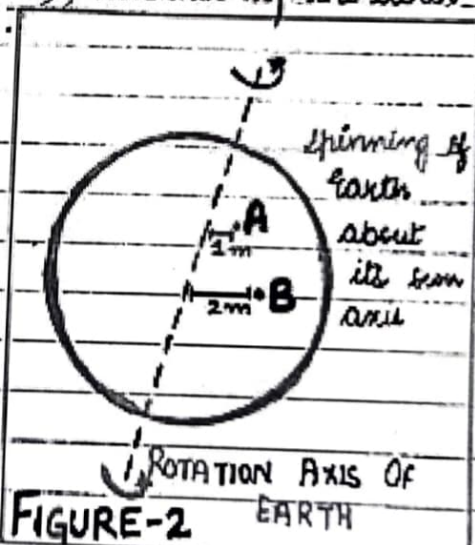
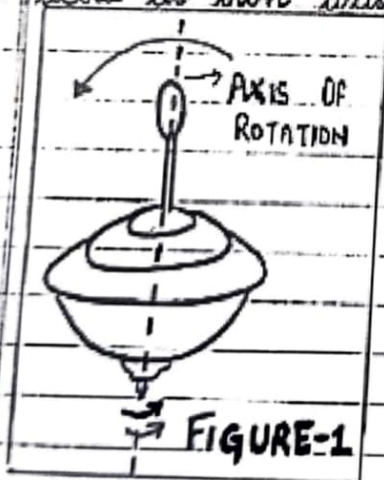
CHAPTER - 2

TEACHER - Charanjeet kaur

Good Morning Students!

This lesson is of class-VII, for the subject - 'Physics',
 Topic - 'Different types of motion' which is covered in
 Chapter - 2 'Motion' of your Physics textbook, titled -
 'Concise Physics by Selina Publications',

1. **ROTATORY MOTION** - A body is said to be in a rotatory motion if it moves about a fixed axis.
 FOR EXAMPLE → a spinning top, the blades of a fan, potter's wheel, rotation of a door around hinges (while opening or closing the door), rotation of the earth about its own axis etc.



- ✓ As it can be seen in figure-1 and figure-2, in rotatory motion, the axis of rotation passes from a point in the body itself (see the dashed lines passing through the rotating body).
 ✓ In rotatory motion, point near the axis of rotation covers the least distance while the point at the farthest distance from axis of rotation has to cover more distance.
 (If you remember, last week it was informed that in translatory motion, each point of object travels

equal distance).

See figure-2, the distance covered by point A will be less as compared to the distance covered by point B in one complete rotation.

Figure-3 is made to clarify that distance travelled by A (shown with solid curve) is less than distance travelled by B (shown with dotted curve) for one complete rotation of earth.

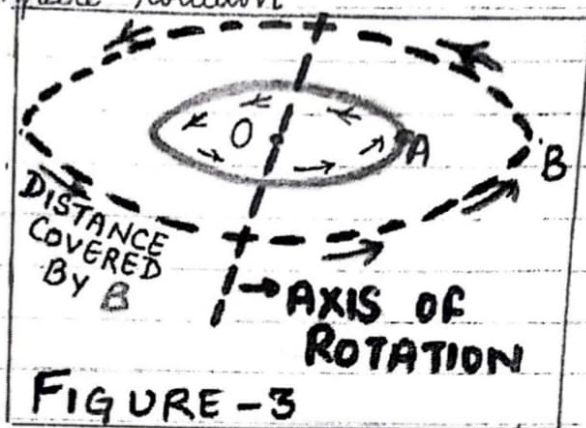


FIGURE-3

2. CIRCULAR MOTION - The motion of a body along a circular path is called circular motion. It is a special type of curvilinear motion in which the distance of a moving object from a fixed point (centre) does not change. FOR EXAMPLE - motion of earth around the sun, motion of moon around the earth, motion of a car around a circular path etc.
- NOTE - In circular motion, the axis of revolution passes through a point outside the body.

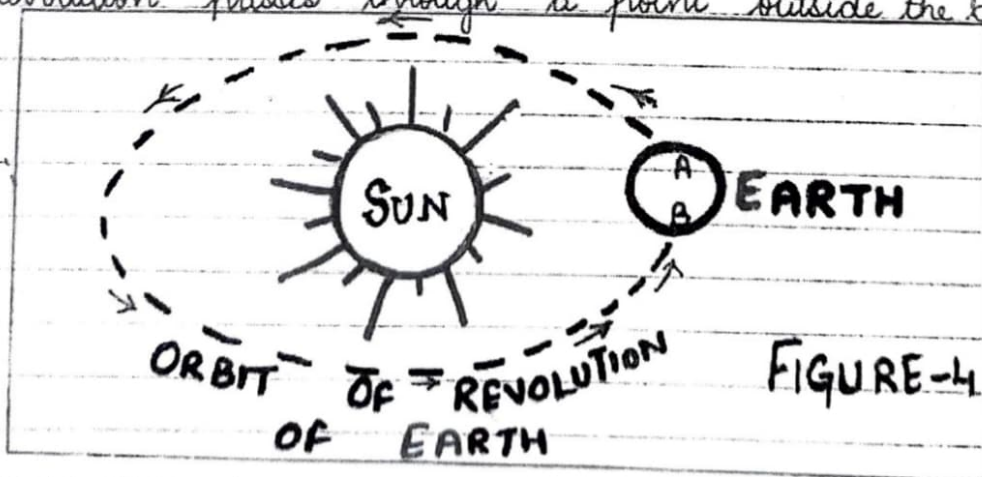


FIGURE-4

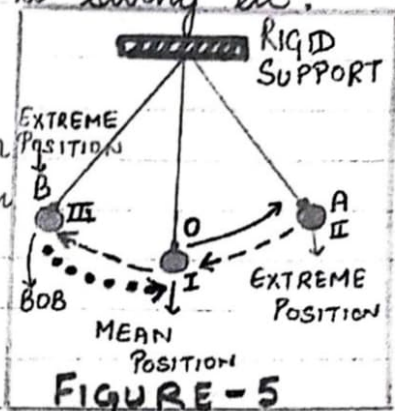
Now after one complete revolution, distance travelled by point A is same as the distance travelled by point B. CIRCULAR MOTION IS REPETITIVE AND PERIODIC (which occurs after fixed interval of time)

3. OSCILLATORY MOTION - The to and fro motion of a body from its rest position (or mean position) is called the oscillatory motion.

FOR EXAMPLE - motion of the simple pendulum of a wall clock, motion of a swing etc.

In figure - 5, an oscillating simple pendulum is shown.

Firstly, the bob of simple pendulum moves from its rest (mean) position O to one of its extreme position A, comes back to point O and then moves to the other extreme position B and then again comes back to its mean position O.



This process is continuously repeated after regular interval of time.

Thus, OSCILLATORY MOTION IS ALSO REPETITIVE AND PERIODIC MOTION (ie. it also occurs after a regular (fixed) interval of time).

4. VIBRATORY MOTION - It is also an oscillatory motion with the difference that in vibratory motion, a part of the body always remains fixed and the rest part moves to and fro about its mean position.

In this motion, the shape and size of the body changes.

FOR EXAMPLE - Musical instruments like guitar, violin, sitar etc. have strings attached to them and by plucking these strings, sound is produced due to vibration motion produced by plucked strings.

Students, you must have noticed that while breathing, your chest expands and contracts.

This motion is also vibratory motion.

5. PERIODIC MOTION - A motion which gets repeated after a regular interval of time is called the periodic motion. FOR EXAMPLE - i) Earth takes 365 (nearly) days to complete one revolution around sun. It means that after 365 days, it will be again at same position from where it started its motion initially.

Students you are requested to take a break of 5 minutes and observe the motion of rotation of blades of fan, seconds hand of wall clock, vibratory motion when your mobile phone is placed on a table and after observing different motions, you may resume further.

NON-PERIODIC MOTION - The motion which does not repeat itself after a regular interval of time is called non-periodic motion. FOR EXAMPLE -

i) A footballer running on a field - the motion of the fielder as he will not continue to repeat its motion after a period of time (regular interval of time). That is, he will not continue to run on the field throughout the time or not even halt at a fixed interval of time.

ii) Motion of tides in the sea.

MIXED MOTION - Sometimes a body can have more than one type of motion simultaneously. Such a motion is called a mixed motion.

FOR EXAMPLE - i) The wheels of a moving vehicle have both translatory as well as rotatory motion. The wheel rotate through its rotational axis and also travels a path (forming example of translatory motion) (observe figure - 6)

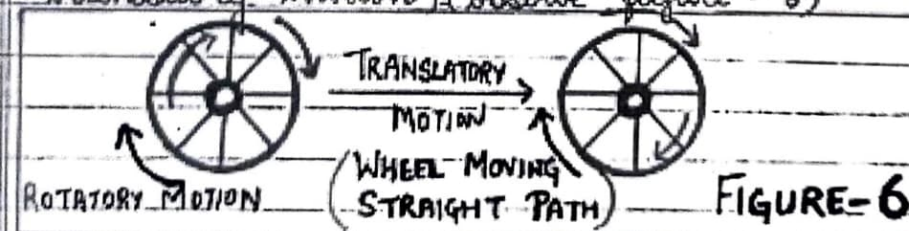


FIGURE-6

ii) Similarly, a ball rolling on the ground has rotatory motion as well as translatory motion as it moves on the ground.

iii) A carpenter's saw has translatory (as it cuts straight in downward direction).