

Anushri Behera

Class - VII, Sec - C

School No - 3029 Chapter - 2



MOTION

A) Write true or false for each statement :-

a) Two trains going in opposite directions with the same speed are at rest relative to each other. False.

b) A ball is thrown vertically upwards. Its motion is uniform throughout. False.

c) The motion of a train starting from one station & reaching True.

d) A motion which repeats itself after a fixed interval of time is called periodic motion. True.

e) A ball thrown by a boy from a roof-top has oscillatory motion. False.

f) Mass has both magnitude & direction. False.

g) Weight always acts vertically downwards. True.

b) Mass varies from place to place but weight does not.
[false].

2) a) Two boys cycling on the road with the same speed
are at rest relative to each other.

b) The motion in a straight line is rectilinear motion.

c) One to & fro motion of a clock pendulum takes
time = 2s.

d) $36 \text{ km h}^{-1} = \underline{10 \text{ m s}^{-1}} \text{ m s}^{-1}$.

e) Total distance travelled average speed
 \times total time taken.

f) The weight of a girl is 36 kgf. Her mass will be 36 kg.

g) The weight of a body is measured using a spring balance.

3) Match the following :-

Column A

Column B

a) Circular motion

i) a running fan

b) Periodic motion

ii) a car moving in a market

c) Vibratory motion

iii) movement of the hands of a clock.

d) Rotatory motion

iv) motion of wire of a guitar

e) Non uniform motion

v) motion of pendulum of a clock

4) a) A book lying on a table is an example of :-

Ans) c) a body at rest

b) The motion of a pendulum is :-

Ans) Oscillatory

c) A car moving on a straight road is an example of

Ans) Rectilinear motion.

d) A ball falls down vertically. Its motion is :-

Ans) linear

e) If a body covers equal distances in equal intervals of time, the motion is said to be :-

Ans) uniform

f) A boy goes from his house to school by bus at a speed of 20 km h^{-1} & returns back through the same route at a speed of 30 km h^{-1} . The average speed of his journey is :-

Ans) 24 km h^{-1}

g) The earth attracts a body of mass 1 kg with a force of 10 N . The mass of a boy is 50 kg . His weight will be :-

Ans) 500 N

B) 1) Ans) Rest = A body is said to be at rest if it does not change its position with respect to a fixed point in its surroundings.

Motion = when the position of a body with respect to its surroundings changes with time, the body is said to be in motion.

2) Ans) An object can be in motion relative one set of objects while at rest relative some other set of objects. Thus, rest and motion are relative terms. This can be understood by the following examples.

Example :- Suppose you are sitting in a room. You are at rest in relation to all other stationary objects inside the room. But the room is on earth & the earth itself is not at rest. The earth revolves around the sun. It takes one year to complete one revolution around the sun. Thus, you are also revolving with the earth around the sun.

a)
3) Ans) A person walking in a compartment of a stationary train is in motion relative to the compartment & is at rest relative to the platform.

4) A person sitting in a compartment of a ~~station~~ moving train is at rest relative to other persons sitting by his side & is in motion relative to the platform.

4) Ans) The five types of motion are :-

- i) Translatory motion
- ii) Rotatory motion
- iii) Circular motion
- iv) Oscillatory motion
- v) Vibratory motion

5) Ans) If an object like a vehicle, moves in a line in such a way that every point of the object moves through the same distance in the same time, then the motion of the object is called translatory motion.

Example :- The motion of an apple falling from a tree.

6) Ans) Rectilinear motion :- If the motion of a body is along a straight line, it is said to be a rectilinear motion.

Example :- A ball falling from a height straight towards the surface of the earth.

ii) Curvilinear motion :- If the motion is along a curved path, it is said to be a curvilinear motion.

Example :- the motion of a cycle while taking a turn on the road.

7) Ans A body is said to be in a rotary motion if it moves about a fixed axis.

Example :- The blades of a fan, a spinning top.

Ans The motion of a body along a circular path is called circular motion.

Example :- The motion of a satellite around the earth.

Ans In rotary motion, the axis of rotation passes from a point in the body itself whereas in circular motion, the axis of revolution passes through a point outside the body. Thus, the motion of a satellite around the earth is a circular motion whereas the motion of earth about its own axis is a rotational motion.

2) In circular motion, the distance of a point of the body from a fixed joint always remains the same whereas it is not the same in curvilinear motion.

1) Ans) The to & fro motion of a body from its rest position (or mean position) is called the oscillatory motion.

Example :- The motion of the pendulum of a wall clock & the motion of a swing represent oscillatory motion.

11) Ans) In vibratory motion a part of the body always remains fixed & the rest part moves to & fro about its mean position. During the vibratory motion, the shape & size of the body changes.

Example :- Our vocal cords vibrate to produce sound when we speak or sing.

12) Periodic motion

Non-Periodic motion

1) A motion which gets repeated after a regular interval of time is called a periodic motion.

1) The motion which does not repeat itself after a regular interval of time is called non-periodic.

2) Example :- A normal person's heart beats every 0.8 seconds.

2) Example :- application of brakes in a moving vehicle.

13) Ans) The motion of an object which takes path in no specific direction is called random motion.