Chapter-2

MOTION

Sub-Topic Name:

Rest and motion, Different types of motion, Speed, Mass and weight

1 Mark Questions

1.Multiple Choice Question (MCQS)

(a) A book lying on a table is an example of

1. a body at rest
2. a body in motion
3. a body neither at rest nor in motion
4. none of these

(b) The motion of a pendulum is

 1. rotatory
2. oscillatory
3. curvilinear
4. rectilinear

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

1. rotatory motion
2. rectilinear motion
3. oscillatory motion
4. periodic motion

(d) A ball falls down vertically. Its motion is

1. periodic
2. linear
 3. circular
 4. vibratory

(e) If a body covers equal distance in equal interval of time, the motion is said to be

1. uniform
2. non-uniform
3. oscillatory
4. rotatory

(f) A boy goes from his house to school by bus at a speed of 20 km h^{-1} and returns back through the same route at a speed of 30 km h^{-1}
The average speed of his journey is
1. 24km/h
2. 25 km/h
3. 30 km/h
4. 20 km/h

(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
1. 50 kg
 2. 500 N
3. 50 N
4. 5 N

2. 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.
(b) A ball is thrown vertically upwards. Its motion is uniform throughout.
(c) The motion of a train starting from one station and reaching at another station is non-uniform.
(d) A motion which repeats itself after a fixed interval of time is called periodic motion.
(e) A ball thrown by a boy from a roof-top has oscillatory motion.
(g) Weight always acts vertically downwards.
(h) Mass varies from place to place but weight does not.

3. Fill in the blanks
(a) Two boys cycling on the road with the same speed are at ……… relative to each other.
(b) The motion in a straight line is ………. motion.
(c) One to and fro motion of a clock pendulum takes time = …….. s

(d) 36 km h-1 = …….. m s^{-1}

(e) Total distance travelled = ……….. × total time taken.

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

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

Rest and motion

Short Answer Type Questions

I. Explain the meaning of the terms rest and motion.

II. Comment on the statement 'rest and motion are relative terms'.

III. Fill in the blanks using one of the words : at rest, in motion. (a) A person walking in a compartment of a stationary train is relative to the compartment and is relative to the platform. (b) A person sitting in a compartment of a moving train is relative to the other person sitting by his side and is relative to the platform.

Long Answer Type Questions

I. How rest and motion are relative ? Explain with one example

Different Types of motion

Short Answer Type Questions

I.   Name five different types of motion you know.

II. What do you mean by translatory motion ? Give one example.

III. Explain the meanings of (i) rectilinear motion, and (ii) curvilinear motion. Give one example of each.

IV. What is rotatory motion ? Give two examples.

V.   What is meant by circular motion ? Give one example.

VI. Explain oscillatory motion by giving one example

VII. What is random motion. Give one example.

Long Answer Type Questions

I.   How does a rotatory motion differ from the circular motion?

II. Differentiate between periodic and non-periodic motions by giving an example of each.

III. Name the type/types of motion being performed by each of the following:

(a) Vehicle on a straight road (b) Blades of an electric fan in motion (c) Pendulum of a wall clock (d) Smoke particles from chimney (e) Hands of a

clock (f) Earth around the sun (g) A spinning top

Speed
Short Answer Type Questions
  I.   Explain the meaning of the term speed.

  II.   Write the S.I. unit of speed

  III. A car travels with a speed 12 ms^{-1}while a scooter travels with a speed 36 km h^{-1}. Which of the two travels faster?

  IV. Find out the relation between m/s and km/h ?

  V.   What is average speed ?

Long Answer Type Questions
  I.   State the types of motion of the following : (a) The needle of a sewing machine (b) The wheel of a bicycle (c) The drill machine (d) The carpenter's saw

  II.   Distinguish between uniform and non-uniform motions, giving an example of each.

  III. How do you determine the average speed of a body In a non-uniform motion ?

Mass and weight
Short Answer Type Questions
  I.   Define the term weight and state its S.I. unit.

  II.   How are the units of weight, kgf and newton related ?

  III. Which quantity : mass or weight, does not change by change of place ?

  IV. State which of the quantities, mass or weight is always Answer: directed vertically downwards.

Long Answer Type Questions
  I.   State three differences between mass and weight

Numerical
  I.   A car covers a distance of 160 km between two cities in 4 h. What is the average speed?

  II.   A train travels a distance of 300 km with an average speed of 60 km/h . how much time does it take to cover the distance?

III. A boy travels with an average speed of 10 m/s for 20 min .How much distance does he travel ?

IV. A boy walks a distance 30 m in 1 minute and another 30 m in 1.5 minute. Describe the type of motion of the boy and find his average speed in m/s.

V. A cyclist travels a distance of 1 km in the first hour, 0.5 km in the second hour and 0.3 km in the third hour. Find the average speed of the cyclist in km h^{-1}.

VI. A car travels with speed 30 km/hour for 30 minutes then with speed 40 km /h for 1 h Find : (a) the total distance travelled by the car (b) the total time of travel, and (c) the average speed of car

VII. On earth the weight of mass 1.0 kg is 10 N. What will be the weight of a boy of mass 37 kg in (a) kgf (b) N ?

VIII. The weight of a body of mass 6.0 kg on moon is 10 N. If a boy of mass 30 kg goes from earth to the moon surface, what will be his (a) mass, (b) weight.

IX. A car travels a distance of 15 km in 20 minute. Find the speed of the car in (i) km/h (ii)m/s

X. How long a train will take to travel a distance of 200 km with a speed of 60 km/h?

XI. A boy travels with a speed of 10 m for 30 minute. How much distance does he travel?

XII. Express 36 km/h in m/s