Excel Coaching Classes

Date: 10-Jul-2026
Time: 60min

Laws of motion

Marks: 20

Q.1(A) Choose the correct alternative. **(2)**

i _____ force acting on an object brings it in motion.

(A) Large (B) Balanced

(C) Unbalanced (D) Tangential

ii If the position of an object is changing with respect to its surroundings, then it is said to be _____.

(A) in uniform motion (B) in circular motion

(C) in motion (D) stationary

Q.1(B) Answer the following. **(3)**

i State True or False:
Earth moves around the Sun with uniform velocity.

ii Define:

Uniform motion

iii Name the following:
The force equal to and opposite to action force

Q.2(A) Give scientific reasons. (Attempt any 1) **(2)**

i Give Scientific Reason.
It is easier to stop a tennis ball as compared to a cricket ball, when both are travelling with the same velocity.

ii Give Scientific Reason.
Even though the magnitudes of action force and reaction force are equal and their directions are opposite, their effects do not get cancelled.

Q.2(B) Answer the following. (Attempt any 1) **(2)**

i State the following law with examples:

Newton's third law of motion

ii(a) Name the following:

A quantitative measure of inertia of a body

(b) Give example of the following:

Change in direction of motion without a change in speed of a body.

iii The mass of a cannon is 500 kg and it recoils with a speed of 0.25 m/s. What is the momentum of the cannon?

Q.3 Answer the following. (Attempt any 2) (6)

i(a) Distinguish between:
Speed and velocity

(b) In the table given below, the distances covered by Rahul for different time intervals are mentioned. Study the table and determine the type of motion.

Time in the clock(pm)	Distance covered by Rahul in km
5:00	0
5:30	15
6:00	30
6:30	45
7:00	60

ii Explain the principle of conservation of momentum.

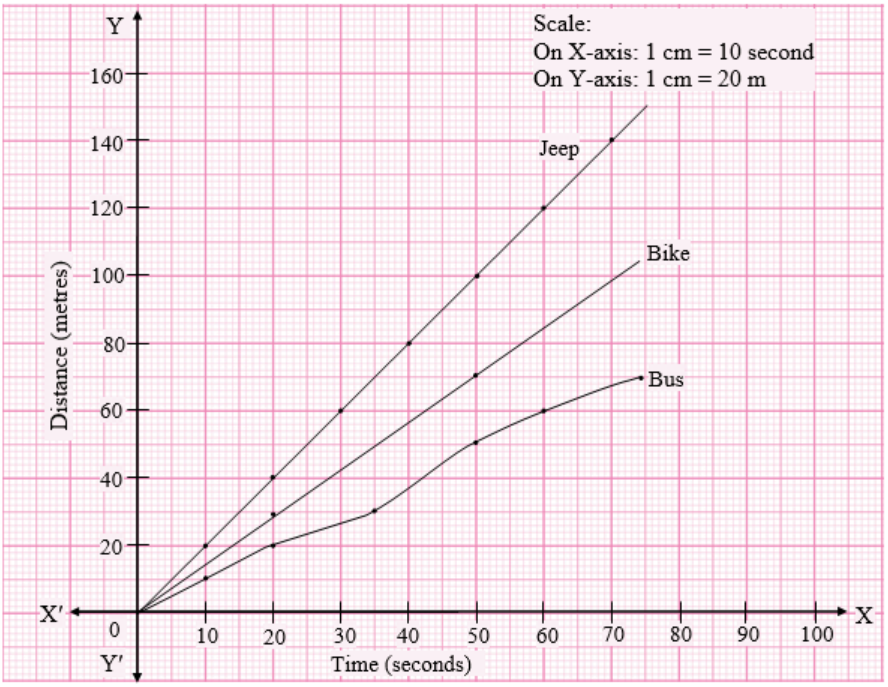
iii(a) Name the following:
Direction along which coin kept on rotating disc would be thrown off if the disc is rotated fast enough

(b) Name the following:
Product of mass and acceleration

(c) Name the following:
The first scientist to measure speed as distance/time

Q.4 Answer the following. (Attempt any 1) (5)

i Given below are distance-time graphs for a bike, a jeep and a bus starting from the same spot at same time along straight road. Answer the following questions, studying the graph.



(a) Assuming all the vehicles maintain the type of motion they are undergoing, for which vehicle we cannot find the distance covered after 150 seconds?

(b) What will be the nature of speed-time graph for the jeep?

(c) What is the value of acceleration of the bike?

(d) Assuming all the vehicles maintain the type of motion they are undergoing, what will be the distance between the bike and jeep at 120 seconds?

(e) Which vehicle has maximum average speed?

ii(a) A train starts moving from rest and attains a velocity of 90 km/hr after 2 minutes. If the force exerted by engine is 750 N, then calculate the mass of the train.

(b) An object moves 18 m in the first 3 s, 22 m in the next 3 s and 14 m in the last 3 s. What is its average speed?

(c) When an object is at rest in the beginning of its motion, what is its initial velocity?