

∴ Short response questions:-

Q1:- In a park children are playing and enjoying a ride on Ferris wheel what kind of motion the big wheel has and what kind of motions the rider have.

Motion of Big wheel:- motion of big wheel is "rotatory motion". as it is rotating about its axis, so the motion of wheel is rotatory motion

Motion of rider:- motion of rider is "circular motion" as childrens are not rotating they are moving in a circular path.

Q2:- A boy moves for some time, give two situations in which his distance is not zero but its displacement is zero.

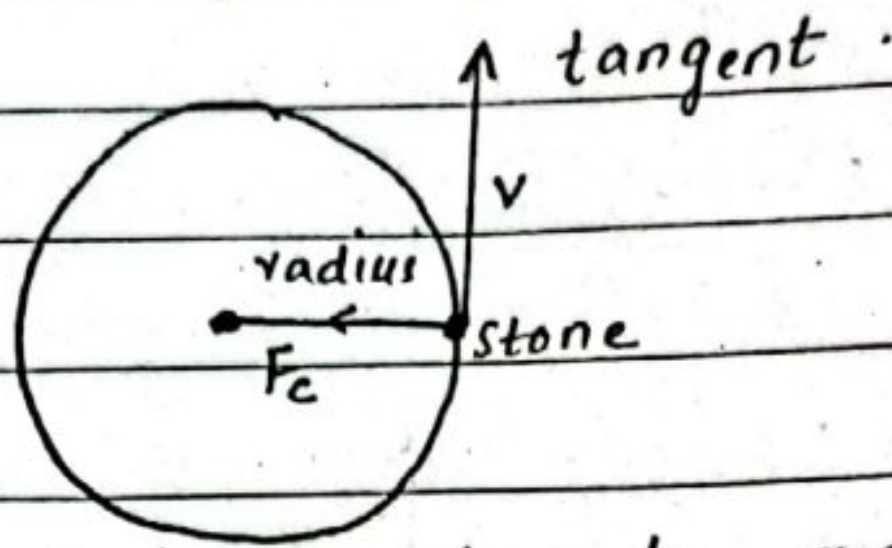
If starting and points are same then displacement will be zero.

Case I:- When a boy moves in a straight line from A to B and comes back from B to A then his displacement is zero because starting and ending points are same but distance is not zero which is equal to $5+5=10\text{m}$.

Case II:- When a boy moves on a circular path then his displacement is zero because starting and ending points are same but distance is not zero which is equal to $2\pi r$.

Q3:- A stone is tied to string is whirling in circle, what is direction of its velocity at any instant?

when a stone move in a circle then the direction of its velocity is always "tangent" to the circle which is perpendicular to the direction of centripetal force or radius of circle.



Q4:- It is possible to accelerate an object without speeding it up or slowing it down.

Yes, it is possible.

Example:- when an object moves in a circular path, the object has acceleration due to change in direction.

⇒ In this case the object moves with constant speed i.e. its speed neither increases nor decreases.

Q.5 Can a car moving toward right can have direction of acceleration toward left?

Yes,

→ If a car is moving toward right then direction of velocity and acceleration is same i.e. toward right.

→ When we apply brakes to the car then its speed decreases and deceleration is produced in it. In this case direction of velocity is towards right but direction of acceleration is toward left.

DATE: ___/___/___

Q6:- with help of daily life example, describe the situations.

- (a) acceleration is in the direction of motion
- (b) acceleration is against the direction of motion
- (c) acceleration is zero and body is in motion

(a) Acceleration is in the direction of motion:-

If a car is moving on a straight line with increasing speed then the acceleration is in the direction of motion.

(b) Acceleration against the direction of motion:-

Why we apply brakes then speed of the car decreases and deceleration is produced. In this case acceleration is against the direction of motion.

(c) Acceleration is zero and body is in motion:-

If car is moving with uniform speed then the velocity does not change with time. So, in this case acceleration is zero but car is in the motion.

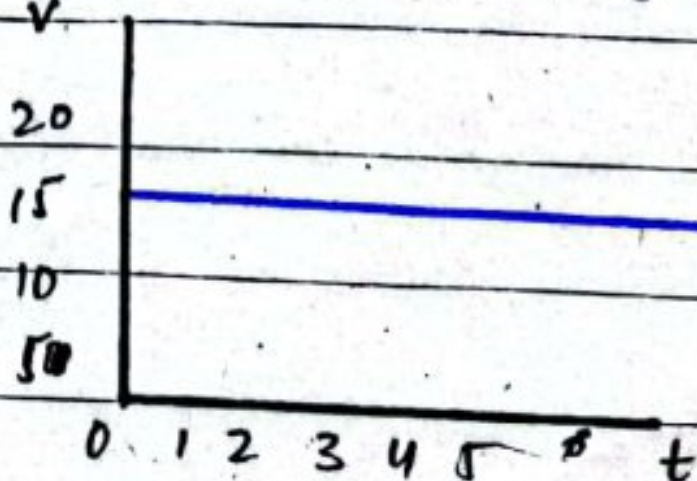
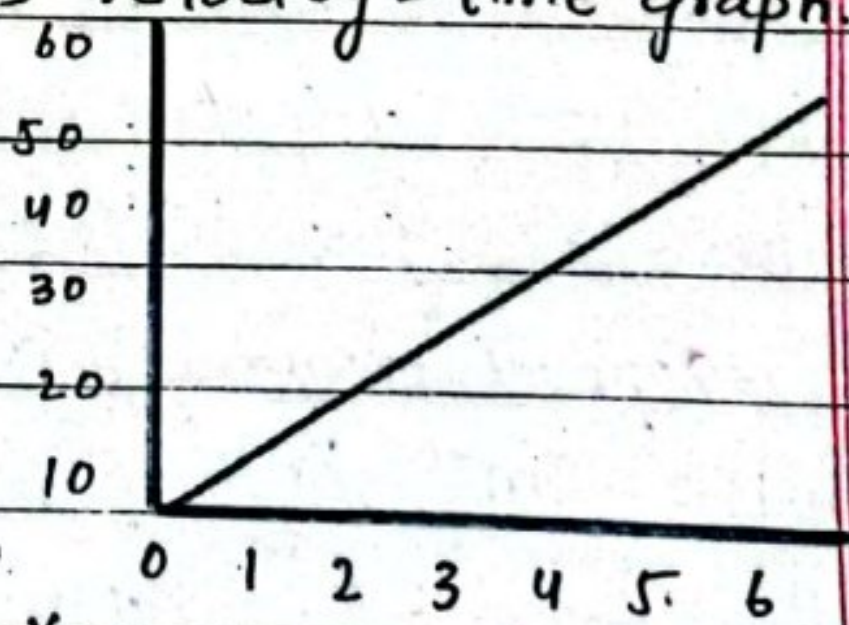
Q1:- Examine distance time graph of a motorcyclist what does this graph tell us about the speed of motorcyclist, also plot its velocity-time graph.

→ This graph tells us that

Speed of motorcyclist is uniform (constant) because it covers equal distance

in equal intervals of time

⇒ velocity-time graph of above motion (moving with uniform velocity)



DATE: ___/___/___

Q8:- Which controls in the car can produce acceleration or deceleration in it?

Accelerator:- acceleration in the car increases the speed of the car when pressed, so it produces acceleration in the car.

Brakes:- brakes in the car decrease the speed of the car when pressed, so brakes deceleration in the car.

Q9:- If two stones of 10kg and 1kg are dropped from a 1km high tower which will hit ground with greater velocity (Neglect air resistance)

In presence of air resistance:- heavier stone will hit the ground with great speed because the force with which earth attracts the body towards its center is equal to the weight of the object. So the heavier stone will hit the ground with great velocity.

Neglect air resistance:- If we neglect air resistance both the stones will reach on the ground at same time.

Q10:- A 1kg ball is dropped (from rest) and another is thrown downward with velocity of 5 m/s which will have greater acceleration (Neglect air resistance)

There are two balls each of which is 1kg. One is dropped (from rest) and other is thrown downward with 5 m/s . Both of these balls are moving under the force of gravity with an acceleration $g = 9.8\text{ m/s}^2$ so both of balls will have same acceleration independent of their masses.