DATE: __/__/__ Ch#02 "KINEMATICS"

: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=10m.

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 ~~be~~ 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?

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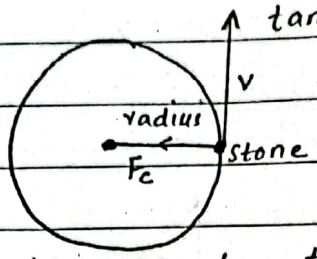
when a stone move in a circle then the direction of its velocity is alway "tangent" to the circle which is perpendicular to the direction of centripetal force or radius of circle.



Qu:- 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 it's speed decreases and deceleration is produced in it. In this case direction of velocity is towards right but direction of acceleration is toward left.

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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.

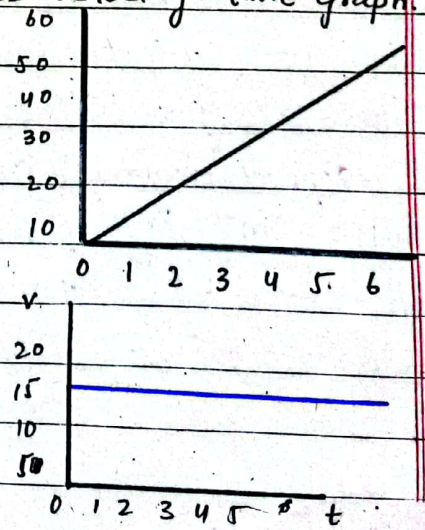
(b) **Acceleration against the direction of motion:-**
Why we apply brakes then speed of the car decreases. and deceleration is produced In this case acceleration is against the direction of motim.

(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.

Q7:- Examine distance time graph of a motocyclist what does this graph tell us about the speed of moto cyclist, 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)



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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 decreases the speed of the car when pressed, so brakes decelration 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 beauce the force with which earth attract the body towards it 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 stone will reach on the ground at same time.

Q10:- A 1kg ball is dropped (from rest) and another is thrown downward with velocity of $5ms^{-1}$ 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 $5ms^{-1}$. Both of these balls are moving under the force of gravity with an acceleration $g = 9.8 ms^{-2}$ so both of balls will have same acceleration independent of their masses.