

Q.1

Which of the following statements is not true?

A. motion is always uniform

B. motion is a change of position

C. motion can be described in terms of displacement

D. motion can be uniform or non-uniform

a) (B)

b) (A)

c) (D)

d) (C)

Q.2

The maximum speed of a train is 90 km/h. It takes 10 hours to cover a distance of 500 km. The ratio of its average speed to maximum speed is:

a) 9:5

b) 5:9

c) 1: 5

d) 5:1

Q.3

Usha swims in a 90 m long pool. She covers 180 m in one minute going either way. The average velocity is:

a) 30ms^{-1}

b) zero

c) 180ms^{-1}

d) 90ms^{-1}

Q.4

Starting from rest at the top of an inclined plane a body reaches the bottom of the inclined plane in 4 seconds. At what time does the body cover one fourth the distance starting from rest at the top?

a) 3 second

b) 2 second

c) 1 second

d) 4 second

Q.5

A particle accelerates from rest at a constant rate for some time and attains a constant velocity of 8 ms^{-1} . Afterward, it decelerates at a constant rate and comes to rest. If the total time taken is 4 second, the distance travelled is:

- a) 32 meter
- c) 4 metre

- b) 16 metre
- d) insufficient data

Q.6

Assertion (A): The speedometer of an automobile measure the average speed of the automobile.

Reason (R): Average velocity is equal to total displacement per total time-taken.

a) Both A and R are true and R is the correct explanation of A.

b) Both A and R are true but R is not the correct explanation of A.

c) A is true but R is false.

d) A is false but R is true.

Q.7

Assertion (A): The speed or velocity of a car running on a crowded city, road changes continuously.

Reason (R): The movement of a car on a crowded city road is an example of non-uniform acceleration.

a) Both A and R are true and R is the correct explanation of A.

b) Both A and R are true but R is not the correct explanation of A.

c) A is true but R is false.

d) A is false but R is true.

Q.8

Assertion (A): Motion of satellites around their planets is considered as accelerated motion.

Reason (R): During their motion, the speed remains constant, while the direction of motion changes continuously.

- a) Both A and R are true and R is the correct explanation of A.
- c) A is true but R is false.

- b) Both A and R are true but R is not the correct explanation of A.
- d) A is false but R is true.

Q.9

Assertion (A): A bus moving due north takes a turn and starts moving towards the east with the same speed. There will be no change in the velocity of the bus.

Reason (R): Velocity is a vector quantity.

- | | |
|---|---|
| a) Both A and R are true and R is the correct explanation of A. | b) Both A and R are true but R is not the correct explanation of A. |
| c) A is true but R is false. | d) A is false but R is true. |

Q.10

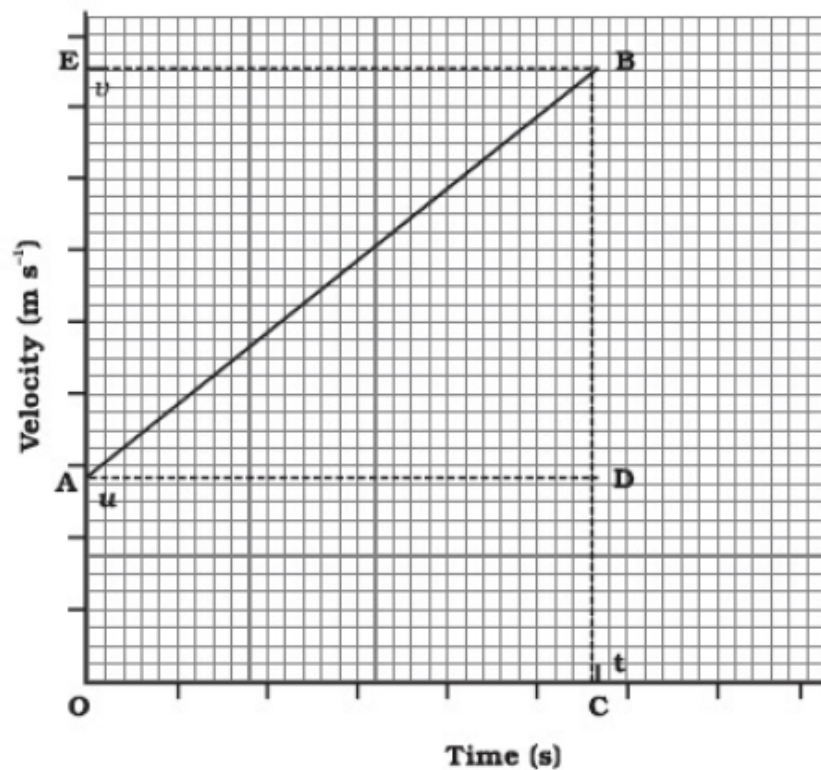
Assertion (A): Velocity versus time graph of a particle in uniform motion along a straight path is a line parallel to the time axis.

Reason (B): In uniform motion the velocity of a particle increases as the square of the time elapsed.

- a) Both A and R are true and R is the correct explanation of A.
- b) Both A and R are true but R is not the correct explanation of A.
- c) A is true but R is false.
- d) A is false but R is true.

Read the following and answer any four questions:

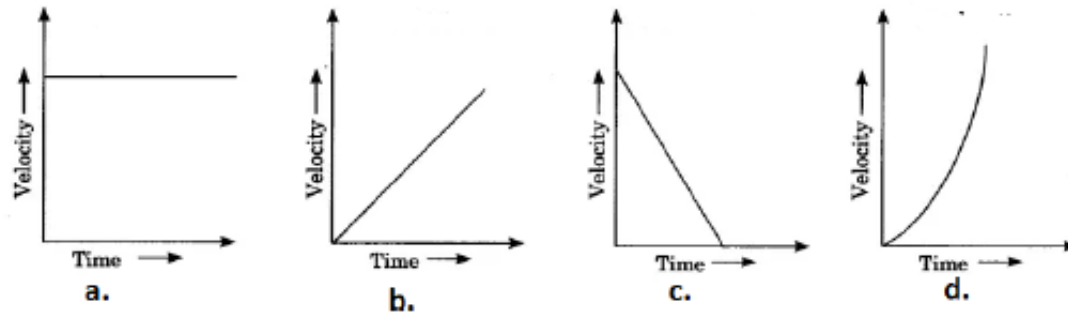
In the velocity-time graph of an object that moves under uniform acceleration as the initial velocity of the object is u (at point A) and then it increases to v (at point B) in time t . The velocity changes at a uniform rate a .



Q.11

- i. A boy goes from A to B with a velocity of 20 m/min and comes back from B to A with a velocity of 30 m/min. The average velocity of the boy during the whole journey is
- 24 m/min
 - 25 m/s
 - Zero
 - 20 m/min

- Q.12 ii. A car is moving along a straight road with uniform velocity. It is shown in the graph.



Q.13

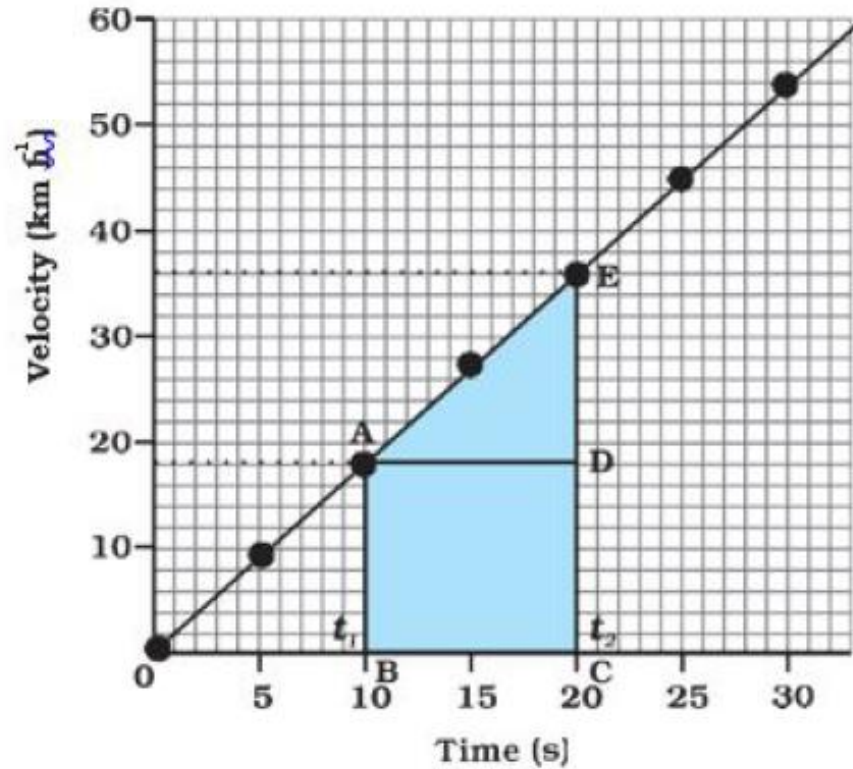
- iii. The ratio of speed to the magnitude of velocity when the body is moving in one direction is
- less than one
 - greater than one
 - equal to one
 - greater than or equal to one
- iv. Which of the following statement is correct with respect to the velocity-time graph given

Q.14

- above?
- the perpendicular lines BC and BE are drawn from point B on the time
 - initial velocity is represented by OA
 - the final velocity is represented by OC
 - the time interval t is represented by OB.
- (I) and (II)
 - (II) and (III)
 - (IV) and (I)
 - (III) and (IV)

Read the following and answer any four questions:

In the velocity-time graph for the motion of the car. The nature of the graph shows that velocity changes by equal amounts in equal intervals of time. For all uniformly accelerated motion, the velocity-time graph is a straight line.



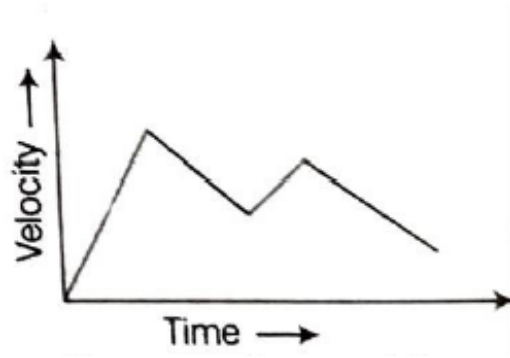
Q.15

- i. The slope of a velocity-time graph gives
 - a. the distance
 - b. the displacement
 - c. the acceleration
 - d. the speed

Q.16

- ii. Which of the following statement is correct regarding the velocity and speed of a moving body?
 - a. The velocity of a moving body is always higher than its speed.
 - b. The speed of a moving body is always higher than its velocity.
 - c. The speed of a moving body is its velocity in a given direction.
 - d. The velocity of a moving body is its speed in a given direction.

Q.17 iii. The following graphs shows:



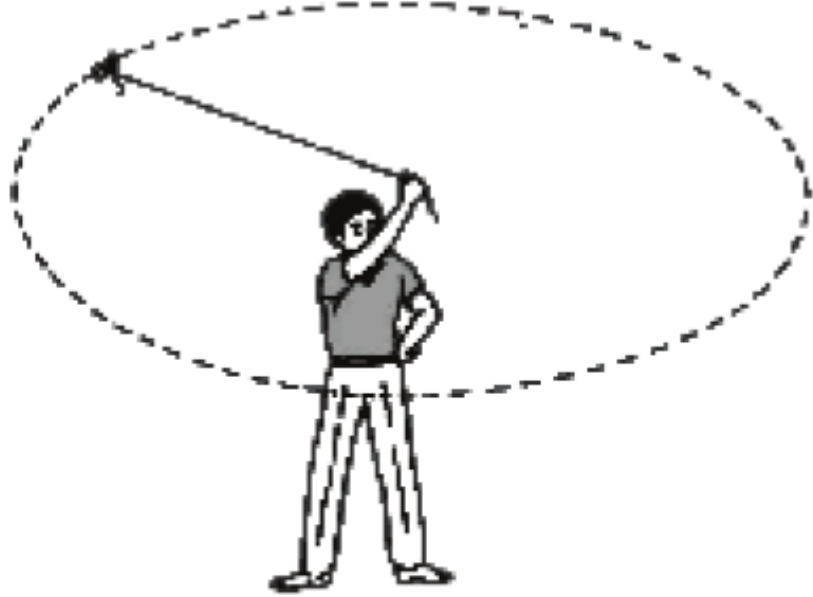
- a. uniformly accelerated motion
- b. non-uniformly accelerated motion
- c. non- uniformly decelerated motion
- d. uniformly decelerated motion

Q.18 iv. If the displacement of an object is proportional to square of time, then the object moves with

- a. uniform velocity
- b. uniform acceleration
- c. increasing acceleration
- d. decreasing acceleration

Read the following and answer any four questions:

When an object moves in a circular path with uniform speed, its motion is called uniform circular motion. The direction of motion changes at every point moving along the circular path.

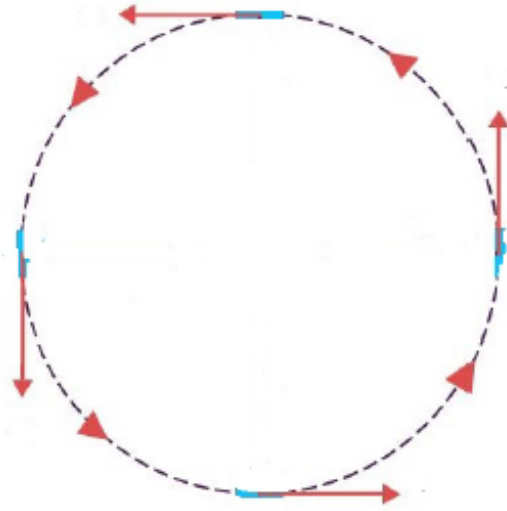


Q.19

- i. Which one of the following is most likely not a case of uniform circular motion?
- a. The motion of the earth around the sun.
 - b. The motion of a toy train on a circular track.
 - c. The motion of a racing car on a circular track.
 - d. The motion of hours' hand on the dial of a clock.

Q.20

- ii. The train is moving on a track (**below image**). Though the speed of a train is constant the direction of motion (or direction of speed) is changing continuously. So, the train is exhibiting:



- a. uniform motion
- b. decelerated motion
- c. uniform motion
- d. accelerated motion

Q.21

iii. A cyclist goes around a circular track once every 2 minutes. If the radius of the circular track is 105 metres, calculate his speed.

a. 5.5 m/s

b. 5.6 m/s

c. 5.7 m/s

d. 5.8 m/s

Q.22

iv. Which of the following statement is correct?

I. Motion of the moon and the earth is an example of non-uniform circular motion.

II. When the velocity of an object changes, we say that the object is accelerating.

III. A satellite in a straight orbit around the earth.

IV. The change in the velocity could be due to a change in its magnitude or the direction of the motion or both.

a. (I) and (II)

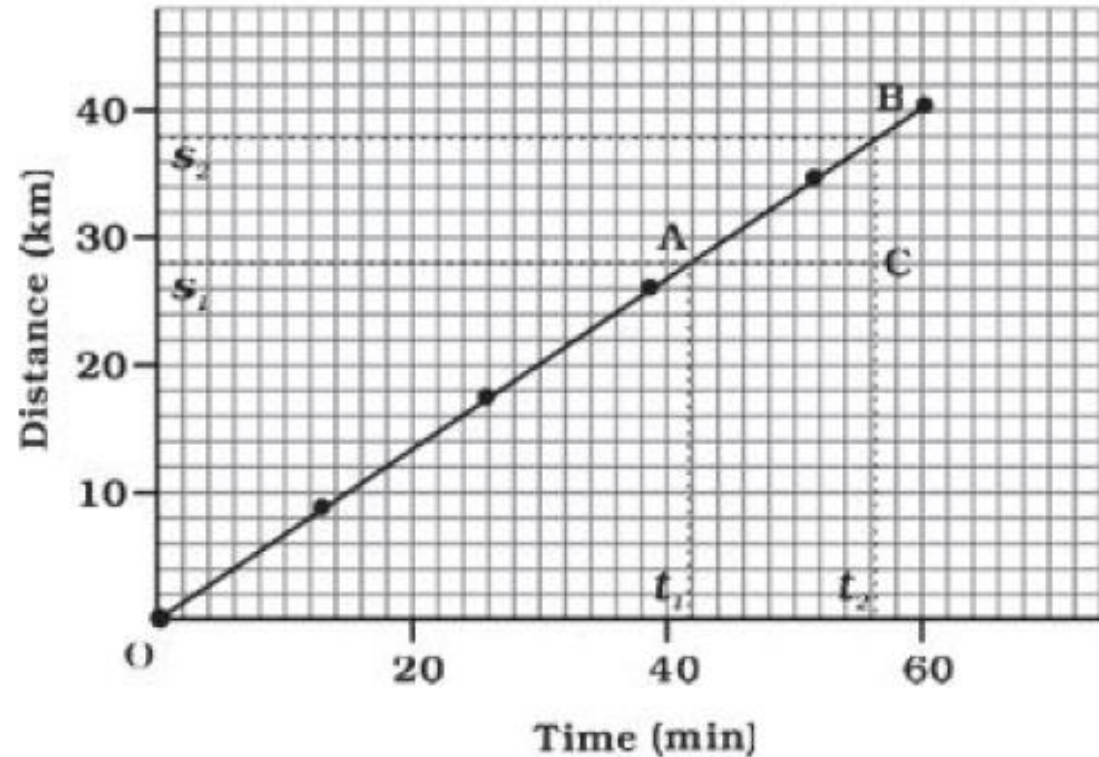
b. (II) and (III)

c. (III) and (IV)

d. (II) and (IV)

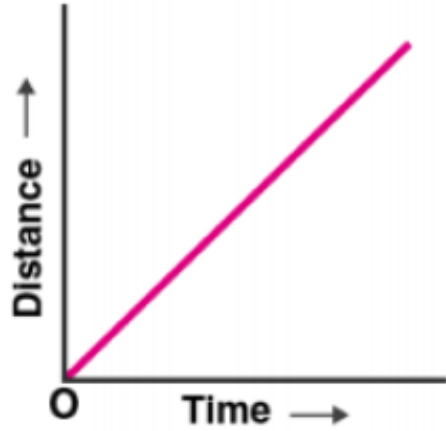
Read the passage and answer any four questions:

Graphical representation of the distance-time graph of moving body at a uniform speed. when an object travels equal distances in equal intervals of time, it moves with uniform speed.



Q.23

- i. What conclusion can you draw about the speed of a body from the following distance-time graph?



- a. Uniform speed
- b. Non-uniform speed
- c. Uniform velocity
- d. Non-uniform velocity

Q.24

- ii. Which of the following statement is incorrect about the graphical representation of motion?
- i. A straight line graph helps in solving a linear equation
 - ii. Line graphs show the dependence of one physical quantity
 - iii. In the distance-time graph, time is taken along the y-axis
 - iv. In the distance-time graph, distance is taken along the x-axis
- a. (I) and (II)
 - b. (II) and (III)
 - c. (II) and (IV)
 - d. (III) and (IV)

Q.25

- iii. The area under a speed-time graph represents a physical quantity which has the unit of :
- a. m
 - b. m^2
 - c. ms^{-1}
 - d. ms^{-2}

Q.26

- iv. A bus moving along a straight line at 20m/s undergoes an acceleration of 4 m/s^2 . After 2 seconds, its speed will be :
- 1. 8 m/s
 - 2. 12 m/s
 - 3. 16 m/s
 - 4. 28 m/s

Q.27

A jet engine works on the principle of Newton's:

a) second law of motion

b) first law of motion

c) none of these

d) third law of motion

Q.28

A ball is dropped from a height of 10m. The ball is embedded in sand of 1m and stops.

a) The only momentum remains conserved.

b) Only kinetic energy remains conserved.

c) Both momentum and kinetic energy are conserved.

d) Neither K.E nor momentum is conserved.

Q.29 Two bodies of masses 1kg and 5kg are dropped gently from the top of a tower. At a point, 50cm from the ground both the bodies will have the same:

a) kinetic energy

b) momentum

c) velocity

d) total energy

Q.30 Impulse has the S.I. unit of _____

a) newton

b) N-s

c) joule

d) m/s^2

Q.31 To find the number of observations less than any given value, we use

a) Single frequency distribution

b) Cumulative frequency distribution

c) None of these

d) Grouped frequency distribution

Q.32 The incorrect option regarding action-reaction pair is

a) they are equal and opposite

b) their sum on/by a body is zero

c) they act only between bodies in contact

d) they act on two different bodies

Q.33 Fill in the gap using given analogy.(i) Momentum conservation : $F = 0$ (ii) Uniform motion in rough surface : _____.

a) Frictional force

b) Non-zero force

c) Internal force

d) Gravitational force

Q.34 Inertia is of _____ types.

a) three

b) four

c) two

d) one

Q.35 **Assertion (A):** The third law of motion states that when one object exerts a force on another object, the second object instantaneously exerts a force back on the first.

Reason (R): The two forces are always equal in magnitude but opposite in direction.

a) Both A and R are true and R is the correct explanation of A.

b) Both A and R are true but R is not the correct explanation of A.

c) A is true but R is false.

d) A is false but R is true.

Q.36 **Assertion (A):** Inertia is that property of the body due to which it resists a change in its state of rest or of uniform motion.

Reason (R): Heavy objects have less inertia than lighter objects.

a) Both A and R are true and R is the correct explanation of A.

b) Both A and R are true but R is not the correct explanation of A.

c) A is true but R is false.

d) A is false but R is true.

Q.37

Assertion (A): When a gun is fired, it exerts a forward force on the bullet.

Reason (R): The bullet exerts an equal and opposite reaction force on the gun.

a) Both A and R are true and R is the correct explanation of A.

b) Both A and R are true but R is not the correct explanation of A.

c) A is true but R is false.

d) A is false but R is true.

Q.38

Assertion (A): Force exerted by the ground on the man moves him forward.

Reason (R): It is a reactional force.

a) Both A and R are true and R is the correct explanation of A.

b) Both A and R are true but R is not the correct explanation of A.

c) A is true but R is false.

d) A is false but R is true.

Q.39

Assertion (A): While catching a fast-moving cricket ball, a fielder in the ground gradually pulls his hands backwards.

Reason (R): The fielder increases the time during which the high velocity of the moving ball decreases to zero.

a) Both A and R are true and R is the correct explanation of A.

b) Both A and R are true but R is not the correct explanation of A.

c) A is true but R is false.

d) A is false but R is true.

Q.40

Assertion (A): If the resultant of all the forces acting on a body is zero, then the forces are called balanced forces.

Reason (R): The forces acting on a stationary box is an example of balanced forces.

a) Both A and R are true and R is the correct explanation of A.

b) Both A and R are true but R is not the correct explanation of A.

c) A is true but R is false.

d) A is false but R is true.

Q.41

Assertion (A): If the net external force on the body is zero, then its acceleration is zero.

Reason (R): Acceleration does not depend on force.

a) Both A and R are true and R is the correct explanation of A.

b) Both A and R are true but R is not the correct explanation of A.

c) A is true but R is false.

d) A is false but R is true.

Q.42

Assertion (A): The sum of the momenta of two objects before the collision is equal to the sum of momenta after the collision.

Reason (R): There should be an external unbalanced force acting on the objects.

a) Both A and R are true and R is the correct explanation of A.

b) Both A and R are true but R is not the correct explanation of A.

c) A is true but R is false.

d) A is false but R is true.

Q.43

Assertion (A): The first law of motion is also known as the law of inertia.

Reason (R): Newton's first law of motion states that a body at rest will remain at rest, and a body in motion will continue in motion in a straight line with a uniform speed unless it is compelled by an external force to change its state of rest or of uniform motion.

a) Both A and R are true and R is the correct explanation of A.

b) Both A and R are true but R is not the correct explanation of A.

c) A is true but R is false.

d) A is false but R is true.

Q.44

Assertion (A): If we kick a football it will move a long way.

Reason (R): The inertia of an object is measured by its mass.

a) Both A and R are true and R is the correct explanation of A.

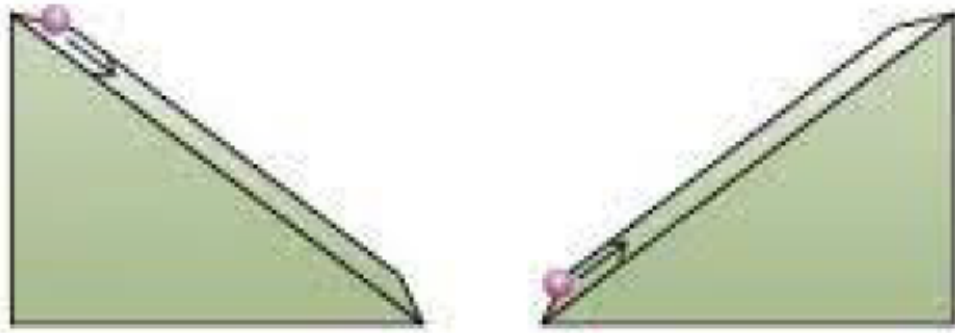
b) Both A and R are true but R is not the correct explanation of A.

c) A is true but R is false.

d) A is false but R is true.

Read the following and answer any four questions:

When a marble rolls down an inclined plane, its velocity increases. The marble falls under the unbalanced force of gravity as it rolls down and attains a definite velocity by the time it reaches the bottom.



- i. When a rubber balloon held between the hands is pressed, its shape changes. This happens because :

Q.45

- i. When a rubber balloon held between the hands is pressed, its shape changes. This happens because :
- a. balanced forces act on the balloon
 - b. unbalanced forces act on the balloon
 - c. frictional forces act on the balloon
 - d. gravitational forces act on the balloon

Q.46

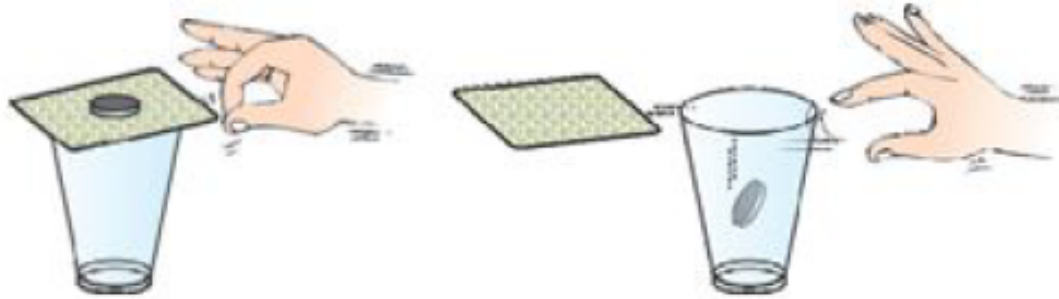
- ii. Which of the following effect cannot be produced by an unbalanced force acting on a body?
- a. Change in speed of the body
 - b. Change in shape of the body
 - c. Change in direction of motion of the body
 - d. Change in state of rest of the body

Q.47

- iv. An object of mass 2 kg is sliding with a constant velocity of 4 m/s on a frictionless horizontal table. The force required to keep the object moving with the same velocity is:
- a. 32 N
 - b. 0 N
 - c. 2 N
 - d. 8 N

Read the passage and answer any four questions:

All objects resist a change in their state of motion. In a qualitative way, the tendency of undisturbed objects to stay at rest or to keep moving with the same velocity is called inertia. The first law of motion is also known as the law of inertia.



Q.48

i. Newton's first law of motion says that a moving body should continue to move forever unless some external forces act on it. But a moving cycle comes to rest after some time if we stop pedaling it. Can you choose the correct reason for the stoppage of cycle?

I. Air resistance

II. The gravitational pull of the earth

III. The friction of the road

IV. The heat of the environment

Choose the correct option:

a. (III) and (IV)

b. (I) and (III)

c. (I) and (II)

d. (II) and (III)

Q.49

- ii. Inertia is the property of a body by virtue of which, it cannot change by itself
 - a. its state of rest
 - b. its steady state of uniform motion
 - c. its direction of motion
 - d. all of the above

Q.50

- iii. 'When a hanging carpet is beaten with a stick, the dust particles start coming out of it'. This phenomenon can be best explained by making use of :
 - a. Newton's third law of motion
 - b. Newton's law of gravitation
 - c. Newton's first law of motion
 - d. Newton's second law of motion