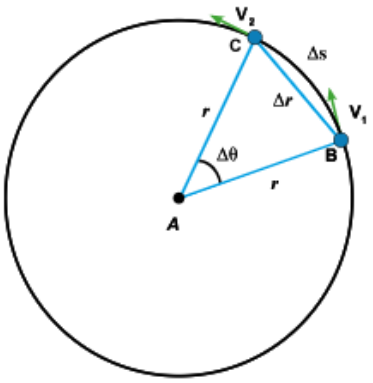
Question 1

The diagram illustrates an object moving at uniform circular motion from point *B* to point *C* during a time interval *t*.

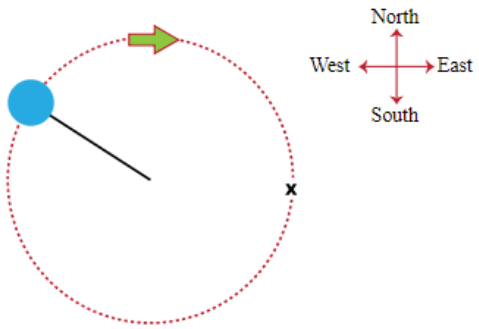


Which statement is correct?

- The magnitude of acceleration is directly proportional to the distance *AB*
- The magnitude of acceleration is inversely proportional to the distance *AB*
- The direction of acceleration is that of the direction of velocity v_1
- The direction of acceleration is that of the direction of velocity v_2.

Question 2

A ball is attached at the end of a string is rotating in a horizontal circular path in a clockwise direction as shown in figure.



The string is broken at the point (x). In which direction the ball moves when reaching the point (x)?

- Westward
- Clockwise
- Southward
- Eastward

Question 3

An object moves at uniform speed (v) in a circular path, the centripetal acceleration is (a). If the object moves in the same circular path at uniform speed ($4v$).

The centripetal acceleration will be …

- $16\ a$
- $4\ a$
- $8\ a$
- $2\ a$

Question 4

The centripetal acceleration by which an object moves in a circular path increases as …

- Radius of the circular path decreases.
- Mass of object increases.
- Radius of the circular path increases.
- Mass of object decreases.

Question 5

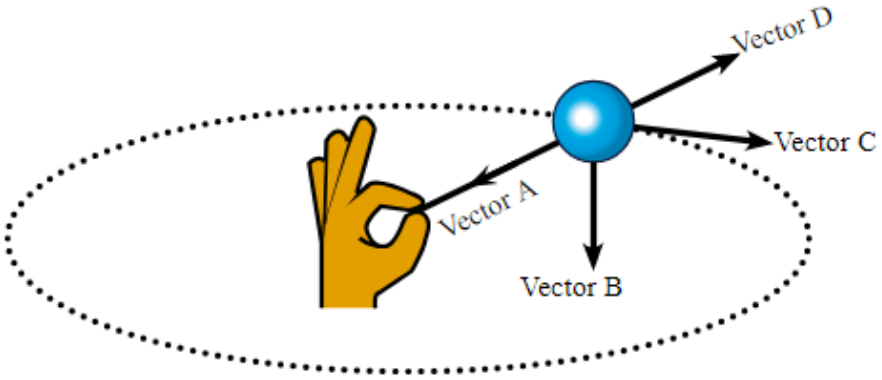
The intensity of the graxititional field on the surface of a planet increases as … decreases

- Its radius
- Thickness of its atmosphere
- Its mass
- Its temperature

Question 6

If the force of gravity exerted by the Planet Earth on its moon is (F),

- ½ F
- 1/6 F
- ¼ F
- F



Question 7

Which vectors given in the diagram represent the velocity and acceleration vectors in circular motion?

- Vector C and Vector A
- Vector D and Vector C
- Vector A and Vector B
- Vector B and Vector D

Question 8

Which quantity decreases as the mass of a satellite decreases in its orbit around the Earth?

- The centripetal force
- The radius of its orbit
- Its orbital velocity
- The centripetal acceleration

Question 9

The orbital velocity of a satellite around the Earth needs to increase to double if …

- The radius of its orbit increases to double.
- The radius of its orbit decreases to half.
- The radius of its orbit increases to four times.
- The radius of its orbit decreases to quarter.

Question 10

The satellite used in communication orbits the Earth a complete revolution in a time interval of

- One day.
- 7 days.
- 28 days.
- 365 days.

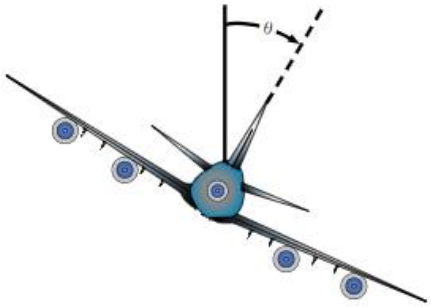
Question 11

A car of mass M kg moves at uniform speed 36 km/h in a circular curve of radius 20 m.

If the centripetal force that keeps the car in the circular path is 5000 N,

Calculate the mass of the car.

Question 12



Why does the piolet banks the airplane as it wants to move in a circular path?

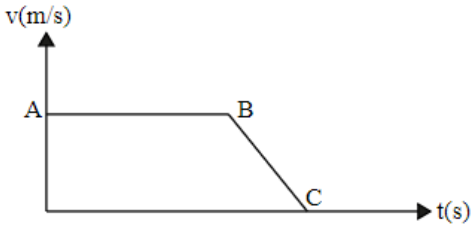
Question 13

A car (A) has mass (m) and a car (B) has mass (2m) are moving from rest at the same acceleration.

What is the ratio between the engine force of both cars, neglecting friction and air resistance in both cases?

Question 14

The graph below represents the motion of a car in two successive stages AB and BC.



In which stage the resultant force acting on the car does not equal zero?

Question 15

A bicycle moves at uniform acceleration 1.0 m/s^2.

If the mass of the bicycle and the rider is 120 kg and the force exerted by the bicycle rider is 130 N.

What is the frictional force opposing the bicycle motion?

Question 16

An object moves with a centripetal acceleration $\frac{64}{7} m/s^2$ in a circular path of radius 28 m.

Calculate the time required to complete one revolution.

Question 17

Given that the mass of Earth is *m* and the mass of the Sun is *M* and the distance between their centers is *D*,

answer the following questions:

1- Which of them attracts the other with a greater force?

2- Why the earth is not pulled into the sun?