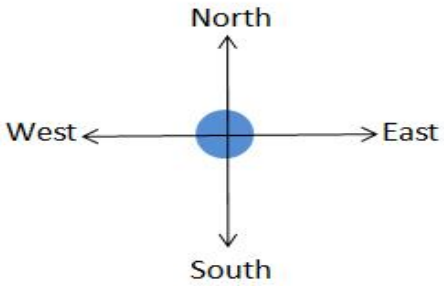
First multiple choice

1) The opposite figure shows a car that moves with velocity v towards east. If force F acts on the car in the east direction, then the car's velocity will ……..



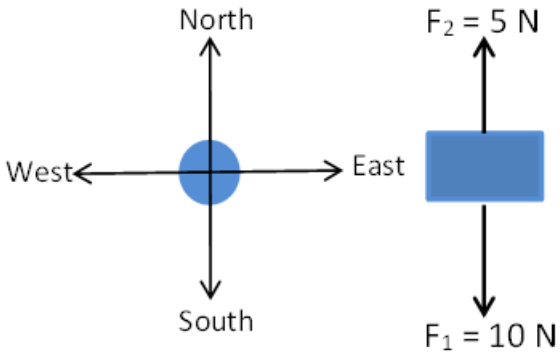
a) decreases and the car will remain moving towards east
b) increases and the car will change its direction gradually towards north
c) increases and the car will remain moving towards east
d) decreases and the car will change its direction gradually towards north

2) When a force acts on a moving body in an opposite direction to its motion, its velocity ..

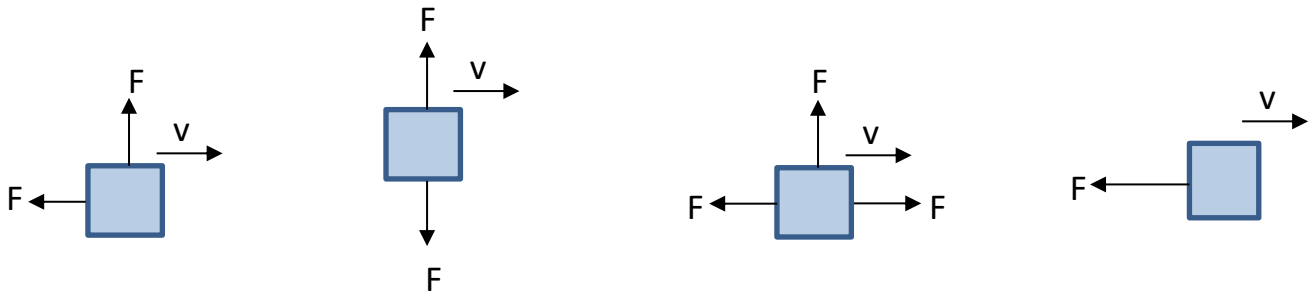
a) decreases without changing direction **b) increases without changing direction**
c) changes direction only **d) changes and its direction also changes**

3) A body moves towards east on a plane frictionless surface with constant velocity. If two forces F_1 and F_2 acts on it as in the opposite figure, then its velocity ….

a) decreases without changing direction	**b) increases without changing direction**
c) changes direction only	**d) changes and its direction also changes**



4) The next figures represent the effect of some forces on a body that moves with velocity v , so which of them can rotate in a uniform circular path? …….



a) b) c) d)

5) the centripetal force acting on a car that moves in a circular path that inclines at an angle with the horizontal is resulted from ……..(not now)

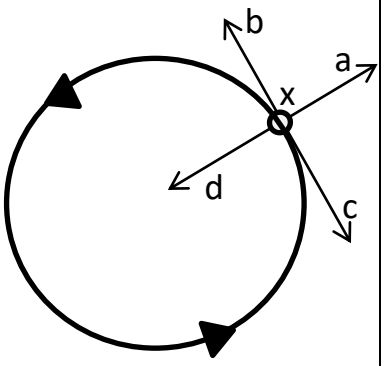
a) the sum of the two vertical components of the friction force and the reaction force.

b) the sum of the two horizontal components of the friction force and the reaction force

c) the sum of the two vertical components of the friction force and the horizontal components of reaction force

d) the sum of the two horizontal components of the friction force and the vertical components of reaction force

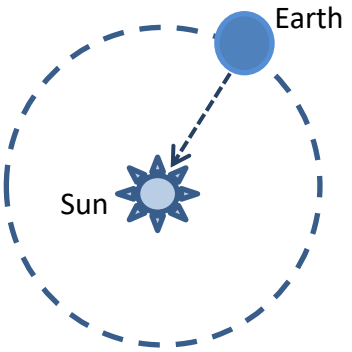
6) A boy ties a stone to a string at its end and moves it in a horizontal plane in the direction of the arrow (e) as shown in the figure.If the boy leaves the string suddenly when the stone is at x, the stone will move in ……. direction (neglecting the gravity)

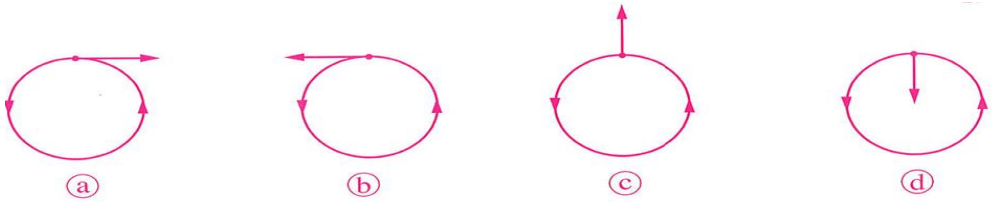


a) $\overrightarrow{xc}$ b) $\overrightarrow{xb}$ c) $\overrightarrow{xb}$ d) $\overrightarrow{xd}$

7) The opposite figure represents the motion of the Earth around the sun in a circular path where the direction of the centripetal acceleration is …….

Correct answer (d)





8) if the tangential linear velocity is doubled and the radius of circular path is also doubled. So, the centripetal acceleration …….

a) decreases to its half b) is doubled

c) increases 4 times d) does not change

9) Two objects A and B move along the circumference of the same circle with the same velocity where $m_A = 2\ m_B$ so, the acceleration with which A moves is …… that with which B moves.

a) equal to b) double of c) half of d) quarter of

10) A car moves around a curve of radius 100 m with constant speed 20 $m.s^{-1}$.
So, the centripetal acceleration …….m/s^2

a) 4 b) 2 c) 5 d) 0.25

11) When a body moves along the circumference of a circle of radius (r) with speed (v). So …..

a) the motion is accompanied by a centripetal force acting on changing the velocity direction

b) the motion is with instant speed

c) v = $\sqrt{\text{centripetal acceleration x r}}$

d) all of the previous

12) If the tangential velocity with which a body moves in a circular path is 7 m/s where its makes 4 revolutions in two minutes. So, the radius of the circular path equals …….

a) 30.6 m b) 33.4 m c) 25 m d) 66.8 m

13) If the radius of circular orbit is increases to four times its original value, the centripetal force required to make the speed of the body constant would be …….

a) decreased to half its value b) unchanged

c) increased to double its value d) decreases to quarter its value

14) if an object mass 6 kg moves in a circle of circumference 6 π with constant speed 10 m/s, so the centripetal force that acts on the body is ……

a) 400 N b) 200 N c) 180 N d) 50 N

15)a man of mass 50 kg rides a bicycle on a curved road with radius 30 m with sped of 2 m/s. if the centripetal force that acts on both the man and the bicycle is 10 N, so the mass of the bicycle is ……..

a) 25 kg b) 50 kg c) 75 kg d) 100 kg

16) The ratio of the centripetal forces acting on two bodies of equal masses when the first moves with a speed of 5 m/s in a circle of diameter 4 m and the second moves with a speed of 10 m/s in a circle of diameter 8 m is ……..

a) $\frac{2}{3}$ b) $\frac{1}{4}$ c) $\frac{1}{3}$ d) $\frac{1}{2}$

17) A stone of mass 4 kg that is tied to a string of length 10 m rotates in a horizontal circle, if the tension force in the string is 160 N. so the stone speed is ……

a) 400 m/s b) 100 m/s c) 20 m/s d) 10 m/s

18) In one of the amusement park games, the chairs rotates in a uniform circular path. If one of the chairs is 1.5 m away from the center and another chair is 2 m away from the center and both of them are on the same straight line away from the center, so which of them has the largest tangent velocity?.....

a) the chairs is 1.5 m away from the center
b) the chair is 2 m away from the center
c) both of them have the same velocity
d) the periodic time must be given to determine the answer

19) A racing car can accelerate by changing ……

a) its direction only b) its speed only
c) either its direction or its speed d) its direction and speed

20) A circular player intended to ride a motorcycle of mass (m) in a vertical loop. Assuming that the loop is a circle with radius (r), what is least speed (v) the player should have at the top of the loop to remain in contact with it?.....(not now)

a) v = gr b) v = g / r c) v = $\sqrt{gr}$ d) v= $(gr)^2$

21) In the display window of a toy store at the local mall, a battery-powered plane is suspended from a string and flying in a horizontal circle. The 631 gram plane makes a complete every 2.15 seconds. The radius of the circle is 0.95 m.
Determine the centripetal force acting upon the plane? …….

a) 5.13 N b) 3.45 N c) 5.7 N d) 10.3 N

22) The maximum frictional force between the types of a car and the road is 0.5 the weight of the car. If the car negotiates a curve of radius 10 meters, so its velocity is …….

a) 10 m/s b) 7 m/s c) 4.9 m/s d) 14.2 m/s

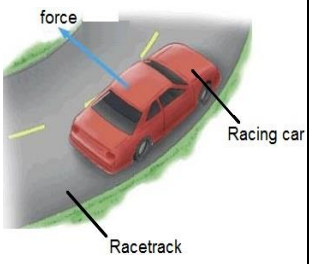
23) A racing car of mass 10^2 kg goes round a circular track (horizontal) of radius 10 m. If the maximum thrust that the truck can withstand is 105 N, so the maximum speed with which the car can go around is ……..

a) 10 m/s b) 100 m/s c) 50 m/s d) 20 m/s

24) if an aircraft executes a horizontal loop of radius 1 km with a steady speed of 900 km/h, so the ratio of its centripetal acceleration to the acceleration due to gravity is ……

a) 9.2 b) 6.25 c) 5 d) 8.25

25) A racing car moves round a circular part of a racetrack.



i) The force that acts toward the center of the circular part of racetrack is caused by …..(not now)

a) air resistance b) friction
c) gravity d) lifting

ii) The force is called …….

a) centripetal force b) circular force
c) perpendicular force d) gravitational force

iii) If another racing car has a greater mass and travels at the same speed around the same racetrack, then the force will need to ……

a) decrease b) stay the same
c) increase d) vanish

iv) When the racing car goes faster, the force will need to ……

a) decrease b) stay the same
c) increase d) vanish

26) A planet of mass 10^{20} kg rotates in a circular path such that its displacement within quarter cycle is $\sqrt{2}$ x 10^{10} m and covers half a cycle within 10^{6} s

Then the centripetal force acting on the planet is ……

a) 2π x 10^{10} N	b) π x 10^{20} N	c) π^2 x 10^{18} N	d) $\sqrt{\pi}$ x 10^{30} N

27)The moon takes 27.3 days to the Earth at an average radial distance of 385000 km from the center of the Earth. What is the acceleration of the moon? ……

a) 2.73×10^{-3} m/s^2 b) 4.96×10^{-3} m/s^2
c) 9.80×10^{0} m/s^2 d) 1.94×10^{-3} m/s^2