Newton's Laws

Multiple Choice - Choose All That Apply

1. In the following statements, option(s) that reduce the impact of inertial are___
    A. Passengers should fasten their seat belts before the plane lands
    B. Sumo wrestlers gains weight
    C. Passengers standing on a moving bus hold the handrail
    D. The athlete must lace up his shoes before running and jumping
2. The correct statement(s) is___
    A. A person applies a force on a stationary car, but is unable to make it move because car has too much inertia.
    B. The faster a car is moving, the harder it is to stop, because the faster a car is moving, the more inertia it has
    C. An object that is thrown up in a vertical direction continues to rise when it is thrown because it receives an upward push
    D. The inertia of a body is related to the mass of the body, the inertia of a large mass is large, the inertia of a small mass is small

3. The correct statement(s) about Newton's second law is/are ____
    A. The net force is proportional to the mass of the object, proportional to the acceleration
    B. The direction of the acceleration is not necessarily the same as the direction of the net force
    C. The acceleration is directly proportional to the external net force and inversely proportional to the mass of the object. The direction of acceleration is the same as the direction of the external net force

4. For the following pairs of forces, the one that is/are equal and opposite is/are____

   A. Tension by a rope on the electric lamp and the gravity of the electric lamp
   B. The force of the electric lamp on the cable and the force of the cable on the electric lamp
   C. Force on the ceiling by a rope and the force of the electric light on the suspension
   D. The force of the rope pulling on the ceiling and the gravity of the lights

5. Under the influence of thrust F, the rocket taking off vertically and produces an acceleration of 10 m/s^2. If the thrust increases to 2F, the acceleration of the rocket will reach (g is 10 m/s^2, excluding air resistance)_____

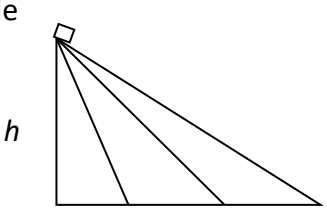
   A. 20 m/s^2
   B. 25 m/s^2
   C. 30 m/s^2
   D. 40 m/s^2

6. An eastward force F_1 acts on the object, resulting in an acceleration of a_1; A northward force, F_2, acting alone on the same object produces an acceleration of a_2. Then F_1 and F_2 act on the object at the same time, resulting in the acceleration of ____

   A. The magnitude of acceleration is $a_1 - a_2$
   B. The magnitude of acceleration is $\sqrt{a_1^2+a_2^2}$
   C. The direction is east by north for arctan $\frac{a_2}{a_1}$
   D. The direction in same as the force with a larger magnitude

7. A smooth object slides down different inclined planes with different angles and equal heights. The object starts from rest and slides from the top of the inclined plane to the end, as shown in the figure. The following analysis is/are correct____

   A. The greater the inclination, the shorter the gliding time
   B. The greater the inclination, the greater the acceleration of the slide
   C. The smaller the inclination, the smaller the average velocity
   D. The dip Angle is 45°, and the gliding time is the shortest



8. A steel ball falls from a standstill in a sufficiently deep oil groove. If the resistance by oil to the ball increases with the ball's speed, then the description of the movement of the steel ball in the falling process is/are correct: _____

   A. Acceleration first, then deceleration, and eventually stops
   B. Acceleration followed by constant speed
   C. It accelerates and then decelerates, and then it reaches a constant velocity
   D. The acceleration gradually decreases to zero

9. An object falls from a height to a light spring upright on the ground, as shown in the figure. At point A, the object is in contact with the spring, and at point B the velocity of the object is zero, and then the spring bounces back. Which of the following statement is/are true____?

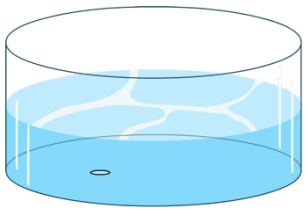
   A. The acceleration of an object decreases as it falls from A to B
   B. The acceleration decreases as the object goes from B to A
   C. As an object falls from A to B, the acceleration decreases first and then increases
   D. As the object rises from B to A, the acceleration increases first and then decreases

10. An object remains static under the influence of several forces. Now, one of the forces gradually decreases to zero and then gradually increases to the original value. During the whole process of force change, the velocity of the object changes as follows:_____

A. It gradually increases from zero to a certain value and then gradually decreases to zero again
B. It gradually increases from zero to a certain value and then gradually decreases to a certain value
C. Increases gradually from zero to a certain value
D. None of the above is true

11. As is shown in the picture, a container containing water has a small hole at the bottom. When at rest, block the hole with your finger to prevent it from leaking. Assuming that the container does not rotate during the following movements and ignores the air resistance, then ()

A. When the container is free falling, the hole leaks down
B. Throw the container vertically upward, when the container moves upward, the hole leaks downward; When the container moves downward, the hole does not leak downward



C. Throw the container horizontally so that the hole does not leak downward during the movement of the container
D. Throw out the container diagonally upward, and the container does not leak from the hole downward during movement

12. The following physical units are available, of which the basic units of the International System of Units are ().

A. Kilograms (kg)
B. M (m)
C. Kelvin (K)
D. Newton (N)

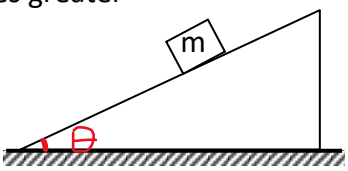
13. As shown in Fig. 5, object M is stationary on an inclined plane and the inclined plane is fixed. If the inclination of the inclined plane θ is slightly increased, object M is still stationary on the inclined plane, then ()

A. The supporting force of the inclined plane on the object becomes greater

B. The friction of the inclined plane on the object increases

C. The inclined plane has less friction on the object

D. The resultant force on the body increases.



14. Regarding the static friction force, which of the following statements is true is ()

A. There must be static friction between two relatively stationary objects

B. Object received static friction must be stationary

C. Static friction force must be resistance

D. Under the condition of a certain pressure, the magnitude of static friction force can be changed

15. An object is placed on a ground with a rough surface area in three different ways as shown in Figure 1. The object moves under the influence of a horizontal tension. If the factors of the kinetic friction between the ground and each contact surface of the object are the same, then_____

A. The magnitude of the friction force on the object is $F_A > F_B > F_B$

B. The relationship between the force of friction on the object is $F_A < F_B < F_C$

C. The relationship between the force of friction on the object is $F_B > F_A > F_C$

D. The relationship between the force of friction on the object is $F_A = F_B = F_C$

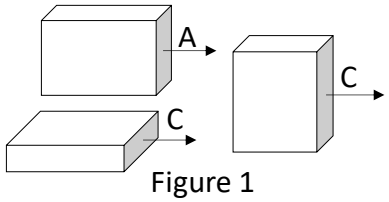


Figure 1

16. As is shown in the figure, the density of the ball is less than that of the water in the beaker. The ball is attached to a spring, and the lower end of the spring is attached to the bottom of

the cup. When the device is at rest, the spring elongates $\triangle$x, and when the whole device is in free fall, the spring elongates___

A. Is still the delta Δx.
B. Greater than Δx.
C. Less than delta Δx
D. Is equal to zero