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Jars Education

Shop no. 2,3,4 hendre pada Badlapur west thane

Time : 1 hour 30 Minute

STD 9 Science
Chapter Based Test

Total Marks : 50

section A

*** Choose the correct option from the given options** [7]

1. The resultant force acting on a body is zero, then.

   (A) Body is in unequilibrium. (B) Body is in equilibrium. (C) Body moves with constant acceleration. (D) Body moves with retardation.

2. The force needed to produce an acceleration of 6m/ s^2 in a ball of mass 4kg will be:

   (A) 24N (B) 30N (C) 32N (D) 36N

3. The inertia of an object tends to cause an object:

   (A) To increase its speed. (B) To decrease its speed. (C) To resist a change in its state of motion. (D) To decelerate due to friction.

4. Identify the type of force involved in opening the door of refrigerator:

   (A) Pulling (B) Pushing (C) Heating (D) Cooling

5. The acceleration of a body has to be doubled without any change in force. Then one has to:

   (A) Increase the mass by half. (B) Decrease the mass to half. (C) Double the mass. (D) Cannot be made.

6. A goalkeeper in a game of football pulls his hands backwards after holding the ball shot at the goal. This enables the goalkeeper to:

   (A) Exert larger force on the ball. (B) Reduce the force exerted by the ball on hands. (C) Increase the rate of change of momentum. (D) Decrease the rate of change of momentum.

7. This type of force resist motion between two surfaces that are pressed together:

   (A) Contact (B) Gravity (C) Friction (D) A and B

*** Fill in the blank with correct answer** [3]

8. A gun recoils to _____ the momentum.

9. Fill in the following blanks with suitable word:
   In collisions and explosions, the total _____ remains constant, provided that no external _____.

10. Impulse has the S.I. unit of _____.

*** Do as directed** [3]

11. State the action and reaction in the following.
    Moving rocket.

12. Give one example where:
A force changes the shape (and size) of a body.

13. What is the usual name of the forces which cannot produce motion in a body but only change its shape?

section B

*** Answer the Questions in brief** **[10]**

1. Name the physical quantity whose SI unit is kg-m/s and write the formula of that quantity.
2. A hockey ball of mass 200g travelling at 10m s^{-1} is struck by a hockey stick so as to return it along its original path with a velocity at 5m s^{-1}. Calculate the magnitude of change of momentum occurred in the motion of the hockey ball by the force applied by the hockey stick.
3. There are two types of forces X and Y. The forces belonging to type X can produce motion in a stationary object but cannot change the shape of the object. On the other hand, forces belonging to type Y cannot produce motion in a stationary object but can change the shape of the object. What is the general name of the forces such as (a) X, and (b) Y?
4. Give reason for the following:
When a hanging carpet is beaten with a stick, the dust particles start coming out of it.
5. What is the change in momentum of a car weighing 1500kg when its speed increases from 36km/h to 72km/h uniformly?

section C

*** Answer the Questions in detail** **[12]**

1. A 60g bullet fired from a 5kg gun leaves with a speed of 500m/s. Find the speed (velocity) with which the gun recoils (jerks backwards).
2. Explain why it is possible for a small animal to fall from a considerable height without any injury being caused when it reaches the ground.
3. Two balls of the same size but of different materials, rubber and iron are kept on the smooth floor of a moving train. The brakes are applied suddenly to stop the train. Will the balls start rolling? If, so in which direction? Will they move with the same speed? Give reasons for your answer.
4. Explain how a rocket works.

section D

*** Answer the Questions in detail [5 marks each]** **[15]**

1. How long will it take a force of 10N to stop a mass of 2.5kg which is moving at 20m/s?
2. Discuss the conservation of momentum in each of the following cases:
   i. A rocket taking off from ground.
   ii. Flying of a jet aeroplane.
3. What do you understand by the terms “balanced forces” and “unbalanced forces”? Explain with examples.

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