



PHYSICS CH:9 FORCE AND LAWS OF MOTION

Name: _____

Date: _____

Class: IX Sec: ____

I SHORT ANSWER TYPE

1. Explain why some of the leaves may get detached from a tree if we vigorously shake its branch
2. Give reason
 - (a) A passenger in a bus tends to fall backward when it starts suddenly.
 - (b) A bullet fired against a glass window pane makes a hole in it without cracking it.
3. Explain, why is it difficult for a fireman to hold a hose, which ejects large amounts of Water at a high velocity
4. Which of the following has more inertia:
 - (a) A rubber ball and a stone of the same size?
 - (b) A bicycle and a train?
5. Explain with reasons:
 - b. A jet aero plane releases a lot of hot gases before taking off.
 - c. We press the ground while walking forward.
6. Explain why a bicycle stops if we stop pedaling.
7. If we take out a piece of paper from under a book with a jerk, the book will not move. Explain.

II NUMERICALS

1. Calculate the force required to impact to a car, a velocity of 30 m s^{-1} in 10 seconds. The mass of the car is 1,500 kg.
2. A cricket ball of mass 70 g moving with a velocity of 0.5 m s^{-1} is stopped by player in 0.5s. What is the force applied by player to stop the ball ? .



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3. What will be acceleration of a body of mass 5 kg if a force of 200 N is applied to it?
4. A bullet of mass 10 g is fired from a rifle. The bullet takes 0.003 s to move through its barrel and leaves with a velocity of 300 m s^{-1} . What is the force exerted on the bullet by the rifle?
5. What force would be needed to produce an acceleration of 1 m s^{-2} on a ball of mass 1 kg?
6. What is the acceleration produced by a force of 5 N exerted on an object of mass 10 kg?
7. How long should a force of 100 N act on a body of 20 kg so that it acquires a velocity of 100 m s^{-1} ?
8. A 1,000 kg vehicle moving with a speed of 20 m s^{-1} is brought to rest in a distance of 50 m,
(i) Find the acceleration; (ii) Calculate the unbalanced force acting on the vehicle
9. Which would require greater force: accelerating a 10 g mass at 5 m s^{-2} or 20 g mass at 2 m s^{-2} ?
10. Find the recoil velocity of a gun having mass equal to 5 kg, if a bullet of 25 gm acquires the velocity of 500 m/s after firing from the gun
11. A bullet of 5 gm is fired from a pistol of 1.5 kg. If the recoil velocity of pistol is 1.5 m/s, find the velocity of bullet.
12. A boy of 50 kg mass is running with a velocity of 2 m/s. He jumps over a stationary cart of 2 kg while running. Find the velocity of cart after jumping of boy.
13. Calculate the velocity of a missile having mass of 100 kg, if it attains a momentum of 5000 kg m/s when fired from a rocket gun?