



INDIAN SCHOOL NIZWA - WORKSHEET

PHYSICS

CH: 5 LAWS OF MOTION

Name: _____

Date: _____

Class: XI Sec: A

I SHORT ANSWER

1. What is the effect on the acceleration of a particle if the net force on the particle is tripled?
2. Why does a heavy gun not kick so strong as light gun using the same cartridges?
3. If the action and reaction are equal and opposite , why do they never cancel each other?
4. Why does an athlete runs some steps before taking a jump?
5. Vehicles stop on applying brakes. Does this phenomenon violate the principle of conservation of momentum?
6. Two blocks of masses m_1 and m_2 are connected by a light spring on a smooth horizontal surface. The two masses are pulled apart and then released. Prove that the ratio of their acceleration are inversely proportional to their masses.
7. Why does a horse has to pull a cart harder during the first few steps of his motion?
8. Why are shockers used in scooter and cars? Explain.
9. Find the work done in sliding a body over a horizontal surface.
10. Why are lubricants used in machines?

NUMERICALS

11. A body placed on a rough inclined plane just begins to slide, when the slope of the plane is 1 in 4. Calculate the coefficient of friction.
12. A bus starts from rest accelerating with 4m/s^2 . At $t = 10\text{s}$, a stone is dropped out of a window of the bus 2m high. What are the (i) magnitude of velocity and (ii) acceleration of the stone at 10.2s? take $g = 10\text{m/s}^2$.
13. A force of 10N acts on a body for 3 microsecond. Calculate the impulse. If mass of the body is 5g, calculate the change in velocity.
14. A car negotiates a banked circular road of radius 50m at a speed of 72km/hr. Which tyres of the car will wear out faster? Calculate the angle of banking so that the car is able to negotiate the curve at that speed.
15. A cyclist speeding at 18km/hr on a level road takes a sharp circular turn of radius 3m with out reducing the speed. The coefficient of static friction between the tyres and the road is 0.1. will the cyclist slip, while taking the turn?
16. A car of mass 1200kg can take a turn on a circular level road of radius 150m with a maximum speed of



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15m/s without skidding. Find the force of friction between the tyres of the car and road.

17. Two masses m_1 and m_2 in projectile motion have velocities v_1 and v_2 respectively at time $t = 0$. They collide at time t_0 . Their velocities become v_1 and v_2 at time $2t_0$ while still moving in air. Find the value of $[(m_1v_1 + m_2v_2) - (m_1v_1 + m_2v_2)]$
18. A vehicle is moving with a velocity v , on a curved road of width b and radius r . For the vehicle to move smoothly what difference in elevation is required in between the outer and inner edges of the road?