Question Bank
Grade 9
Ch 9- Force and Laws of Motion

Q.No	Questions	Answers
1	Which of the following statements is not correct for an object moving along a straight path in an accelerated motion? (a) Its speed keeps changing (b) Its velocity always changes (c) It always goes away from the Earth (d) A force is always acting on it	(d) A force is always acting on it
2	According to the third law of motion, action and reaction (a) always act on the same body (b) always act on different bodies in opposite directions (c) have same magnitude and directions (d) act on either body at normal to each other	(b) always act on different bodies in opposite directions
3	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 balls on the hands (c) increase the rate of change of momentum (d) decrease the rate of change of momentum	(d) decrease the rate of change of momentum
4	A passenger in a moving train tosses a coin which falls behind him. It means that motion of the train is (a) accelerated (b) uniform (c) retarded (d) along circular tracks	(a) accelerated
5	An object of mass 2 kg is sliding with a constant velocity of 4 ms^{-1} on a frictionless horizontal table. The force required to keep the object moving with the same velocity is (a) 32 N	(b) 0 N

	(b) 0 N (c) 2 N (d) 8 N	
6	When a car at high speed makes a sharp turn, the driver in a car tends to get thrown to the side opposite to the turn. This is due to the (a) inertia of motion (b) inertia of time (c) inertia of rest (d) inertia of direction	(d) inertia of direction
7	A man is standing on a boat in still water. If he walks towards the shore, then the boat will (a) move away from the shore (b) move towards the shore (c) remain stationary (d) none of these	(a) move away from the shore
8	A ball is thrown vertically upward in a train moving with uniform velocity. The ball will (a) fall behind the thrower (b) fall ahead of the thrower (c) return back to the thrower (d) fall on the left of the thrower	(c) return back to the thrower
9	An athlete does not come to rest immediately after crossing the winning line due to the (a) inertia of motion (b) inertia of rest (c) inertia of direction (d) none of these	(a) inertia of motion
10	Which of the following is the SI units of force? a. Kgm/s2 b. Kgm/-s c. Newton-metre d. Newton	newton
11	The momentum of an object is product of its mass and ……	velocity
12	According to second law of motion “the rate of change of momentum is directly proportional to	force

	…… applied".	
13	When a carpet is beaten with a stick, dust particle comes out. This phenomenon is an example of …….. law of motion.	first
14	According to third law of motion "to every action there is an equal and …… reaction and they act on two different bodies".	opposite
15	Recoiling of gun is an example of …….. law of motion.	third
16	Define the term force.	A force is a physical quantity which causes or tends to cause a motion in an object at rest or changes or tends to change the direction of motion of a moving object or the shape or size of the object.
17	What do you mean by inertia ?	The tendency of a body to oppose any change in its state of rest or uniform motion is called inertia of the body.
18	State Newtons second law of motion. Give its mathematical expression.	The rate of change of momentum of a body is directly proportional to the unbalanced force acting on it and the change in momentum takes place in the direction of the unbalanced force. F = ma.
19	An object is thrown vertically upward. What is its momentum at the highest point ?	Momentum = mass x velocity. Since velocity of the object at the highest point is zero, so momentum of the object is zero at the highest point.

20	A fast moving truck loses momentum equal to 2 kg m s^{-1} after colliding with a stationary car. Will the car lose or gain momentum ? How much momentum is lost or gained by the car if the truck comes to the rest after collision ?	The car will gain momentum. Momentum gained by the car = 2 kg m s^{-1}
21	State the effect of force in each of the following cases, 1. A spring is stretched, 2. A hockey player hits an incoming ball 3. A football lying on the ground is kicked.	1.Length of spring increases and hence its shape is changed. 2.The direction of the ball is changed. 3.Football comes in motion from rest state.
22	It is difficult to balance our body when we accidendy step on a peel of banana. Explain, why ?	When we walk on the ground, our foot pushes the ground in the backward direction (Action). On the otherhand, ground pushes our foot in the forward direction (Reaction). This reaction of the ground helps us to move in the forward direction.But, when our foot falls on a peel of banana, then our foot slips on the peel of banana and cannot push the ground in the backward direction. Consequently, no reaction force acts on our foot. Hence we lose the balance and fall down.

23	A bullet fired on a glass window makes a fine hole while a stone smashes when hits it. State the reason.	A bullet fired from a gun makes a small hole in the window pane while passing through it, but the stone striking the window pane breaks it into pieces. When a bullet strikes the window pane, only a small portion of the window pane where the bullet strikes comes in motion because the bullet makes contact with the pane for a very short time due to its high speed. On the other hand, the remaining portion of the window pane remains at rest due to inertia of rest. Thus, a small hole is made by the bullet in the window pane. The speed of the stone is very small compared to the speed of the bullet. So the stone makes contact with the window pane for longer period of time. During this-longer time, the whole window pane comes in motion and hence breaks into pieces.
24	Why, no force is required to move an object with a constant velocity ?	We know, F = ma When, velocity is constant,

		then acceleration, a = 0 Hence, F = 0
25	A cricket player lowers his hands while catching a fast moving ball. Explain. Why ?	A cricket player lowers his hands while catching the ball. If a player does not lower his hands while catching the ball, the time to stop the ball is very small. So a large force has to be applied to reduce the velocity of the ball to zero or to change the momentum of the ball. When a player lowers his hands, the time to stop the ball is increased and hence less force has to be applied to cause the same change in the momentum of the ball. Therefore, the hands of the player are not injured.

		 Cricketer lowers his hand while catching a ball