Subject : Physics	**Chapter** : Laws of Motion		**Worksheet No**. 5
Resource Person : Mrs. Jayalakshmi Ratish			**Date** :
Name of the Student :_____	**Class & Division** : XI A/B		**Roll Number** : ___

1	A 70 kg man jumps to a height of 0.8 m. Find impulse provided by ground to man.	1
2	A machine gun has a mass of 20 kg. It fires 35 g bullets at the rate of 4 bullets per second, with a speed of 400 m/s. What force must be applied to the gun to keep it in position?	1
3	A cricket ball of mass 150g moving with speed of 12 m/s is hit by a bat so that the ball is turned back with a velocity of 20 m/s. Calculate the impulse received by the ball.	1
4	A bird is sitting on the floor of a wire cage and the cage is in the hands of a boy. The bird starts flying in the cage, then will the boy experience any change in the weight of the cage?	1
5	An aero plane travelling at a speed of 500 km/h banks at an angle of 30° as it makes a turn. What is the radius of the curve?	1
6	A ball moving with a momentum of 5 kg m/s strikes against a wall at an angle of 45° and is reflected at the same angle. Calculate the change in momentum (in magnitude).	2
7	A truck starts from rest and rolls down a hill with a constant acceleration. It travels a distance of 400 m in 20 s. Find its acceleration. Find force acting on it if its mass is 7 metric tonnes. (hint : 1 metric tonne=1000 kg)	2
8	A hunter has a machine gun that can fire 50 g bullets with a velocity of 900 m/s. A 40 kg tiger springs at him with a velocity of 10 m/s. How many bullets must the hunter fire into the tiger in order to stop him in his track?	2
9	A bullet of mass 10 g moving with velocity of 400 m/s gets embedded in a freely suspended wooden block of mass 900 g. What is the velocity acquired by the block?	2
10	A horizontal force of 1200 gf is applied to a 1500 g block, which rests on a horizontal surface. If the coefficient of friction is 0.3, find the acceleration produced in the block.	2
11	Two inclined frictionless tracks, one gradual and the other steep meet at a point from where two stones are allowed to slide down from rest, one on each track. Will the stones reach the bottom at the same time?	3
12	When an automobile moving with a speed of 36 km/h reaches an upward inclined road of angle 30°; its engine is switched off. If the coefficient of friction involved is 0.1, how much distance will the automobile move before coming to rest? (given: g=10m/s^2)	3

13 The radius of curvature of a railway line at a place when the train is moving with a speed of 36 km/h is 1000 m, the distance between the two rails being 1.5 m. Calculate the elevation of the outer rail above the inner rail so that there may be no side pressure on the rails.   3

14 Why is it easier to pull a body than to push it?   3

15 A pebble of mass 0.05 kg is thrown vertically upwards. Give the direction and magnitude of the net force on the pebble.   3
(a) During its upward motion
(b) During its downward motion
(c) At the highest point where it is momentarily at rest. Do your answers alter if the pebble were thrown at an angle of 45˚ with the horizontal direction?