

FORCE AND LAWS OF MOTION

1 A 20kg bullet can fire 10 bullets per second. Mass of each bullet 0.2kg. Muzzle speed of bullet is 150m/s. What is the recoil velocity of the gun? How much force is required to hold the gun?

Ans Recoil Velocity of Gun - 1 m/s.

Force required to hold the gun - 49 N

2 State and prove law of conservation of linear momentum.

Ans Law of conservation of momentum states that unless an external force is applied, two or more objects acting upon each other in an isolated system, total momentum of system remains constant.

3 A bomb explodes into several parts. Why these parts fly off in different conditions.

Ans Explosion is due to internal forces. In law of conservation of momentum, internal forces can't change the momentum. Hence, After explosion, parts fly off in different directions.

4: Total momentum after collision - iii. 7.5 kg m/s.

ii Velocity of combination of these objects after collision - iv. 1.5 m/s