CHAPTER 3. (GRAVITATION)

Question 42:
When a cricket ball is thrown vertically upwards, it reaches a maximum height of 5 m.
(a) What was the initial speed of the ball ?
(b) How much time is taken by the ball to reach the highest point ? (g=10 ms^{-2})
Solution :
Initial velocity, u=?, Final velocity, v=0
Acceleration due to gravity, g=-10m/s^2, Height, h=5 m
(a) For a freely falling body:
$v^2 = u^2 + 2gh$
$(0)^2 = u^2 + 2 \times (-10) \times 5$
$0 = u^2 - 100$
$u^2 = 100$
So, u=10m/s
(b) Using relation, v=u + gt
$0 = 10 + (-10)\ t$
$-10 = -10\ t$
t=1sec

Question 43:
Write the differences between mass and weight of an object.
Solution :

Mass	Weight
1. The mass of an object is the quantity of matter contained in it.	1. The weight of an object is the force with which it is attracted towards the centre of the earth.
2. SI unit of mass is kilogram (kg).	2. SI unit of mass is newton (N).
3. The mass of an object is constant.	3. The weight of an object is not constant. It changes with the change in acceleration due to gravity.
4. The mass of an object can never be zero.	4. The weight of an object can be zero.