Class – XI
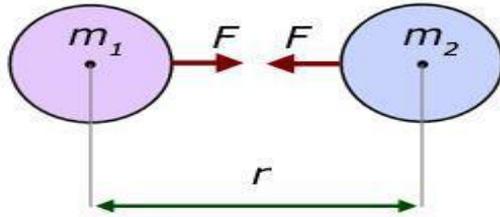# Physics
CHAPTER 8: GRAVITATION

1. What is Gravitation?

Ans: When we talk about gravitation or gravity it is a naturally occurring phenomenon or a force which exists among all material objects in the universe.

2.What is Newton's Law of Gravitation?

 Ans:

The newton's universal law of gravitation shows us that the gravitational force (F) of attraction between two substance is directly proportional to the product of their masses and inversely proportional to the square of the distance between them.

Let their masses be m_1 and m_2 separated by the distance r, then,

$$F = G \, m_1 m_2 / r^2$$

3. Write down Kepler's laws of planetary motion.

Ans: Refer to textbook page number 184.

4. Find out an expression for acceleration due to gravity at a height 'h' from the earth surface.

Ans: Refer to textbook page number 190 (8.6).

5. What is gravitational potential energy?

Ans: Gravitational potential energy is energy an object possesses because of its position in a gravitational field. The most common use of gravitational potential energy is for an object near the surface of the Earth where the gravitational acceleration can be assumed to be constant at about 9.8 m/s^2.

6. Find out an expression for escape velocity of a body from earth surface.

Ans: Refer to textbook page number 193 (8.8) upto equation no 8.32.

7. What is natural and artificial satellite?

Ans: A satellite is anything that orbits around a larger object. A natural satellite is any celestial body in space that orbits around a larger body. Moons are called natural satellites because they orbit planets.

Satellites that are made by people and launched into orbit using rockets are called artificial satellites. There are thousands of artificial satellites orbiting the Earth.

8. Deduce an expression for the orbital velocity of a satellite revolving around the earth in a circular orbit at a height 'h' above the earth surface.

Ans: Refer to textbook page number 194 (8.9) upto 8.36.

HOMEWORK:- NCERT textbook exercise 8.2, 8.15, 8.16, 8.17.