

## Chapter – 02

## Solar System

(نظام شمسی)

❖ **Introduction:**

The Solar System is a gravitationally-bound system comprising the Sun and all of the objects that travel around it. The objects, considered as part of this system are planets, moons, asteroids, comets and meteoroids. It is believed that the Solar System was originated in accordance with the Nebular Theory. This system came into existence by a stimulus diffusion of a very huge solid mass.

❖ **Nebula:**

A cloud of solid dust that includes Hydrogen, Helium and group of other gases is called Nebula. Nebula, in fact, was in extremely hot and glistening condition. In this, firstly a situation of air and gas was developed, and then water and liquid forms appeared. Afterwards, the gravitational collapses occurred in gases and then in other masses evolutionary changes materialized. As a result, various stars and asteroids were formed. There are many types of Nebulae, for example Diffuse, Planetary and Proto-planetary etc.

❖ **Nebular Hypothesis:**

In connection with the Solar System, the Nebular Theory was first presented in 18<sup>th</sup> century A.D. by a Swedish scientist Emanuel Swedenborg. His theory is now being considered valid and effective for all the Galaxies of the whole Universe. According to this theory, Stars are basically comprised of Hydrogen gas and heavy molecular clouds of many other gases. These are called Giant Molecular Clouds (GMC). These clouds continuously travel. Since the gravitational attraction between these molecules is generally weaker therefore these clouds are separated and divided into other different dense multitudes and finally adopt the shapes of various Stars. Nevertheless these Stars are formed with delicate and complicated stages. Stars, like Sun, take 100 million years for its formation.

### ❖ *Solar System:*

The Solar System includes 8 planets, 162 moons and millions of asteroids, comets and meteoroids. All these objects are considered as part of this System. The 8 planets are named in the sequence with respect to the distance from the Sun are Jupiter, Mars, Earth, Venus, Mercury, Saturn, Uranus and Neptune. Planets are those bodies which revolve around the Sun. The second significance of these planets is that these have so much mass in it that they may act as Sphere and could stand independently due to the gravitational attractions. Till recent times, Pluto was also counted as a major planet and considered as part and parcel of the Solar System. But in 2006 AD this has been taken out from the Solar system and included in the list of dwarf planets. Dwarf planets are celestial bodies resembling a small planet but lacking certain technical criteria that are required for it to be classed as Planet.



The Sun with respect to the mass is the largest (99.86%) of the System. Similarly, it is highly dominant in view of the gravitational attraction. In its center the Nuclear Fusion is still continued and with the result huge energy is produced and its Electromagnetic Waves are spread in the space in the form of light.

All planets revolve around the Sun. These planets also take round on their own axes. The first four planets, which is Jupiter, Mars, Earth and Venus are comprised of various mountains predominantly silicates. Below the solid mantle, there is a viscous mantle which keeps on erupting, time to time, in the form of lava. In these planets, the geological activities are constantly continued as well. Mercury is primarily consisting of various gases, whereas the rest of the planets comprise of the ice cold gaseous materials.

