

Program Bachelor of Arts and Science For first Year Subject is geography
semester 1
paper code SGC 101

title of the paper :Introduction and Fundamentals of Geography

module name: introduction to solar system.

And module number 19 and 18.

I am Ms. Sunayana Haldankar, assistant professor in Geography

Government College, sanquelim, Goa.

In this module we're going to look at:

Solar system and its location.

Origin of solar system.

Composition of solar system and Lastly, references.

At the end of this module, students will be able to develop an understanding about the origin of the solar system.

Recall the composition of the solar system.

Examine the importance of each of these celestial body along with that location.

Introduction.

Solar System is gravitationally bound system and the objects that orbit the sun, either directly or indirectly.

Now why we call it a solar system? It is called a solar system because everything in the solar system is centered around the sun.

Formation of the Solar System date backs to about 4600 million years ago.

Our solar system lies in the large or giant universe.

Our solar system is located in the Orient arm of the Milky Way Galaxy, which is also known as Akash Ganga around 27,000 light years from the center of the Galaxy.

Now, light year is basically the unit of distance. Distance that light takes to travel per year. Our solar system takes around 2:20 million years to orbit the Milky Way Galaxy.

Nebular hypothesis developed by Immanuel Kant. It's a very popular and widely accepted model of origin and evolution of solar system.

And according to nebular theory, sun and planets formed from a rotating disk of gases and dust.

As the speed of rotation increased, the center of the disk began to flatten out. Matter became more concentrated at the center where the sun was formed, gradually or eventually.

This was about the origin of the solar system.

Our solar system comprises of a giant star that is Sun, 8 amazing planets, more than 200 moons and millions of asteroids and comets.

Let us look at each of these celestial bodies in detail.

First comes sun.

The sun is located at the center of the Solar System. It is a star, like several billion others star present in the Sky. It is huge in size and it can fit more than hundreds of our planet Earth. It is so wide and so big. It is the spinning ball of hot gases, mainly hydrogen and helium. And its surface temperature is estimated to be 5500 degree Celsius. And it is because of the sun that life is possible on our planet Earth. Without Sun there would be no heat. There would be no light, plants would not grow, water would freeze and nothing could survive. So Sun plays very important role in our survival.

Coming to planets, all the planets are spherical in shape and they revolve around the Sun in the elliptical path. And each of these planet rotates on its axis. The axial tilt of our planet Earth is 23 and half degree. And it is because of these axial tilt seasonal variations are possible.

Now planets are categorized according to the composition and their size.

The four planets, namely: Mercury, Venus, Earth, Mars are also called as terrestrial planets or inner planets because they are very closely located or they are very near to the sun. Now these planets are relatively smaller in size as compared to the other planets. They do not have rings. And they are made up of rocky material.

Now, beyond planet Mars there is a belt called asteroid belt. Beyond asteroid belt there are other four planets. They are Jupiter, Saturn, Uranus and Neptune. All these planets are also called as Jovian planets or outer planets because they are far off at a distant location from the sun. They're very giant. Very Big in size. They don't have solid surfaces. They have multiple moons. Jupiter has around 67 known moons. They support ring system. And they are gaseous and light in nature.

And beyond the planet Neptune, we have a Kuiper belt.

Here is a chart which represents planets, the mean

distance from the sun and it is given in million kilometers, time taken by this planet to orbit the sun and the number of known natural satellites.

Mercury is the closest and the smallest planet and it is located at 57.9 million kilometers away from the sun. And it takes 88 days to orbit the sun.

Coming to Venus. It lies at 108.2 million kilometers from the sun and it takes 224.7 days to complete its orbit.

Both Mercury and Venus do not have moons or do not have their natural satellites.

Coming to Earth, our planet Earth is situated at 149.6 million kilometers from the sun and it takes 365.25 days to complete the orbit around the sun.

Earth is having only one Natural satellite that is moon. It is located at 227.9 million kilometers away from the sun and it takes 687 days to orbit the sun and it has two natural satellites.

Now these were about terrestrial planets or planets which are closed to the sun.

Coming to the Jovian planets or the outer planets, namely Jupiter, Saturn, Uranus, Neptune. These are situated several hundreds and thousands million kilometers away from the sun, and they take hundreds of years to orbit the sun. Because they are situated at longer distance from the sun. And they have multiple moons.

Jupiter having the largest number of known natural satellite. That is 67. All other Saturn has 62 moons. Uranus has 27 satellites, Neptune 14.

Dwarf planets.

There are currently 5 dwarf planets namely Pluto, Eris, Ceres, Makemake, Haumea. only Ceres lies in the asteroid belt, while the rest that is Pluto, Eris Haumea and Makemake lies in the Kuiper Belt.

These Planets are massive in size. They are round and orbit the sun. But they have not cleared their orbital path. That is why they are called dwarf planets.

Moon, which is also known as natural satellite orbit Planets as well as asteroids. All planets have moons except Mercury and Venus.

There are more than 200 moons in our solar system and they vary in shapes, sizes and types.

Asteroids are simply pieces of rocks of metallic objects orbiting the sun in the asteroid belt. There are about 40,000 known asteroids. And they often collide and break into pieces and can also come together to form larger asteroids. They measure from 50 meter to 1000 kilometers across.

Comet is a small icy celestial body that orbits around the Sun. It's only become visible when they come near to the sun or when they approach the sun, and they often release a glowing tail of dust and gas.

So with this we have come to the end of introduction to solar system.

Here are the references.

Thank you.