

# CHAPTER 17: STARS AND THE SOLAR SYSTEM

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1) Celestial objects:

Planets, stars, moon and other objects in the sky are called celestial objects.

2) Astronomy:

The study of celestial objects and related phenomena is called astronomy.

## I. THE MOON:

➤ It is the natural satellite of the earth.

### ➤ Phases of the moon:

- The different shapes of the bright part of the moon as seen during a month are called phases of the moon. The time period between one full moon to the next full moon is slightly longer than 29 days and is considered as one lunar cycle. This period is called a month.

- The moon has no atmosphere or water.

1. Full moon day: it is the day on which the whole disc of the moon is visible.

2. New moon day: On the fifteenth day after the new moon day, the moon is not visible. This day is known as the new moon day

- The moon does not produce its own light.
- The moon revolves around the Earth and the Earth along with the moon, revolves around the Sun.
- The size of the illuminated part of the moon visible from the Earth increases every day after the new moon day.
- After the full moon day, the sunlit part of the moon visible from the Earth decreases in size every day.

### ➤ The moon's surface:

➤ The moon's surface is dusty and barren.

➤ Also, there are many craters of different sizes.

➤ It also has a large number of steep and high mountains, some of which are as high as the highest mountains on the Earth.

## II. THE STARS:

➤ Stars emit their own light. E.g., the sun.

➤ Pole star: It is also called Polaris it appears to have a fixed position as it is situated in the direction of the earth's axis.

➤ Light years: the distance travelled by light in one year. The speed of light is about 300,000 km per second. So, the distance of the Sun from the Earth may be said to be about 8 light minutes.

➤ Constellation: A constellation represents a group of stars that has a recognizable shape.

(1) Examples: Ursa Major, also known as the Great Bear or the *Saptarshi*, Orion, Leo major.

(2) Ursa Major: There are seven prominent stars in this constellation. It appears like a big ladle or a question mark. There are three stars in the handle of the ladle and four in its bowl

- (3) Orion: it can be seen during winter in the late evenings. Orion is also called the Hunter. The three middle stars represent the belt of the hunter. The four bright stars appear to be arranged in the form of a quadrilateral.

### III. THE SOLAR SYSTEM:

- The sun the celestial objects such as planets, comets, asteroids and meteors revolving around it are called the solar system.
- The eight planets revolving in their order of distance from the Sun are: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune
  - i) The sun:  
It is the closest star from the earth. It is the source of heat and light of all the organisms on the planet.
  - ii) The planets:  
Planets are celestial objects which do not emit heat or light of their own. They revolve around a star in fixed paths called orbits and the time it takes to go around the sun once is known as its period of revolution. A planet also spins on its own axis which is called a rotation.
- a) Mercury:  
The planet mercury is nearest to the Sun. It is the smallest planet of our solar system
- b) Venus:  
Venus is earth's nearest planetary neighbor and is the brightest planet in the night sky.
- c) Earth:  
It is the only planet where life exists. It has the right temperature range, the presence of water and suitable atmosphere and a blanket of ozone. The earth has one moon.
- d) Mars:  
It is also called the red planet. It has two small natural satellites
- e) Jupiter:  
It is the largest planet of the solar system. Jupiter has a large number of satellites and also has faint rings around it. It is so large that about 1300 earths can be placed inside this planet. Mass of Jupiter is about 318 times that of Earth.
- f) Saturn:  
It appears yellowish in color. Saturn also has a large number of satellites. It has thousands of rings around it.
- g) Uranus and Neptune:  
These are the outermost planets and can be seen only with the help of a large telescope.

### IV. Asteroids:

These are small celestial objects between the orbits of Mars and Jupiter. They can only be viewed through telescope.

### V. Comets:

A Comet appears generally as a bright head with a long tail. The length of the tail grows in size as it approaches the sun. The tail of a comet is always directed away from the sun.

### VI. Meteorite:

A meteor is a small object that occasionally enters the earth's atmosphere. It has a very high speed. The friction due to the atmosphere heats it up. It glows and evaporates quickly. It is also known as the shooting star.

**VII. Artificial Satellites:**

These Satellites are man-made and are launched from the Earth. They revolve around the Earth much closer than earth's natural satellite, the moon. E.g., Aryabhata. Artificial satellites are used for weather forecasting, long distance communication and remote sensing.