

In this chapter, we will discuss about our solar system, position of planets and important facts about universe.

SOLAR SYSTEM STARS AND CONSTELLATION

Universe

The universe is commonly defined as the totality of everything that exists including all physical matter and energy, the planets, stars, galaxies. The Study of universe is known as cosmology.

Solar System

The solar system consists of the sun, eight planets and their satellites (or moons) and thousands of other smaller heavenly bodies such as asteroids, comets and meteors.

Sun

- The Sun is the centre of the solar system and all these bodies revolve around it. It is the nearest star to the earth.
- Time taken by sunlight to reach the earth is 8 minutes and 16.6 seconds.

Moon

Moon is the only satellite of the earth. It completes its rotation in 27 days, 7hr. 43 min and 11.47 sec and same is the time taken by moon in one revolution around earth.

A waterless area on the moon's surface is called Ocean of storms.

Galaxy

- A galaxy is a vast system of billions of stars, dust and light gases bound by their own gravity. There are 100 billion galaxies in the

universe and each galaxy has, on average, 100 billion stars.

- Our galaxy is **Milky Way Galaxy** (the Akash Ganga) formed after the Big Bang.
Andromeda is the nearest galaxy to the Milky Way.

Stars

Stars are heavenly bodies made up of hot burning gases and they shine by emitting their own light.

Comets

Comets are made up of frozen gases. They move around the sun in elongated elliptical orbit with the tail always pointing away from the sun.

Constellations

The sky is divided into units to enable the astronomers to identify the position of the stars. These units are called constellations. There are 88 known constellations.

Classification of Planets

- **Inner Planets** They are called as Terrestrial or Rocky planets. They include Mercury, Venus, Earth and Mars.
- **Outer Planets** They are called as Jovian or Gaseous planets. They include Jupiter, Saturn, Uranus and Neptune.

Note Dwarf Planet According to International Astronomical Union (IAU), it is a celestial body in direct orbit of the Sun, that is massive enough that its shape is controlled by gravitational forces, but has not cleared its neighbourhood. e.g., Pluto, Ceres, Eris, Makemake and Haumea.

- A **light year** is the distance light travels in one year at the speed of 3×10^8 m/s (one light is equal to 9.46×10^{15} metres).
- **Astronomical unit** mean distance between Earth and Sun (1.49×10^8 km). One light year is equal to 60,000 AV.

Important Facts about Universe

Biggest Planet	Jupiter
Biggest Satellite	Jupiter
Blue Planet	Earth
Green Planet	Uranus
Brightest Planet	Venus
Brightest Planet outside Solar System	Sirius (Dog Star)
Closest Star of Solar System	Proxima Centauri
Coldest Planet	Neptune
Evening Star	Venus
Farthest Planet from Sun	Neptune
Planet with maximum number of satellites	Jupiter
Fastest revolution in Solar System	Mercury
Hottest Planet	Venus
Densest Planet	Earth
Fastest rotation in Solar System	Jupiter
Morning Star	Venus
Nearest Planet to Earth	Venus
Nearest Planet to Sun	Mercury
Red Planet	Mars
Slowest Revolution in Solar System	Neptune
Slowest Rotation in Solar System	Venus
Smallest Planet	Mercury
Smallest Satellite	Deimos (Mars)
Earth's Twin	Venus
Only Satellite with an atmosphere like Earth	Titan
Colour of sky for astronaut	Black

PRACTICE EXERCISE

- 'Our universe is expanding'. This speculation is propounded by
 - Newton
 - Galileo
 - Edwin Hubble
 - Copernicus
- Which one of the following star is the nearest to the Earth?
 - Polestar
 - Comet
 - Sun
 - Asteroid
- The distance between the sun and the Earth is
 - 1.49×10^2 km
 - 1.49×10^8 km
 - 2×10^{20} km
 - 7.46×10^{23} km
- The moon completes one revolution around Earth in
 - 27 days 7 hrs 43 min
 - 29 days 3 hrs 20 min
 - 20 days 2 hrs 10 min
 - 10 days 4 hrs 5 min
- Which year man firstly landed on the Moon?
 - 1963
 - 1965
 - 1969
 - 1972
- What portion of the moon is visible from the Earth's surface?
 - 57%
 - 34%
 - 20%
 - 41%
- The area of the moon's surface where there is no evidence of the water is called
 - ocean of storms
 - areas of storms
 - smoke of storms
 - None of these
- The calm and dark back part of the moon is called
 - sea of tranquility
 - oceans of storms
 - Both (a) and (b)
 - None of these
- Which of the following statement is correct?
 - Moon is the only natural satellite of Earth
 - The time period of the moon is approx 27.3 days
 - The time period of moon is roughly equal to the rotational period of moon about its own axis
 - All of the above
- Aakash Ganga is the common name given to
 - Milky way galaxy
 - planet Uranus
 - Earth
 - the Sun
- The smallest planet in our solar system is
 - Earth
 - Jupiter
 - Venus
 - Mercury
- Which of planets is known as 'outer planets'?
 - Mercury, Venus, Earth and Mars
 - Mercury, Venus, Jupiter and Neptune
 - Neptune, Venus, Mercury and Mars
 - Jupiter, Saturn, Uranus, Neptune
- The small groups of planetary pieces which are confined and revolving between Mars and Jupiter are called
 - meteors
 - comet
 - celestial bodies
 - asteroids
- The Earth has the size among all the planets
 - fifth
 - third
 - fourth
 - seventh
- The planet whose relevancy as a planet has been ended at Prague Summit of IAU in
 - Uranus
 - Pluto
 - Mars
 - Neptune

- 16.** The planet which has the largest number of satellites is
 (a) Saturn (b) Jupiter
 (c) Mars (d) Neptune
- 17.** The planet which completes one revolution in 88 days around the sun is
 (a) Mercury (b) Venus
 (c) Mars (d) Saturn
- 18.** The largest satellite of the planet Saturn is
 (a) Atlas (b) Titan
 (c) Tethis (d) None of these
- 19.** Which of the following are true?
 (a) A polar satellite goes around the Earth's pole in North-South direction
 (b) A geostationary satellite goes around the Earth in East-West direction
 (c) A geostationary satellite goes around the Earth in West-East direction
 (d) Both (a) and (c)
- 20.** From the space the sky appears to an astronaut
 (a) blue (b) red
 (c) white (d) black

Answers

1	(c)	2	(c)	3	(b)	4	(a)	5	(c)	6	(a)	7	(a)	8	(a)	9	(d)	10	(a)
11	(d)	12	(d)	13	(d)	14	(a)	15	(b)	16	(b)	17	(a)	18	(b)	19	(d)	20	(d)