



The Universe

The **Universe** consists of the total physical matter and energy existing. It consists of all the stars, planets and other material. The study of the Universe is known as **Cosmology**.

- A **Galaxy** is a system of a large number of stars along with gas and dust clouds.
- It is isolated from other similar galaxies in the Universe.
- Our solar system is part of the galaxy called the **Milky Way**. Andromeda is the nearest galaxy to the Milky Way.
- **Stars** are heavenly bodies made up of hot burning gases and they shine by emitting their own light.
- **Comets** Made up of frozen gases. They move around the Sun in elongated elliptical orbit with the tail always pointing away from the Sun.
- **Satellites** are the heavenly bodies that revolve around the planets. Moon is the natural satellite of the Earth.

Our Solar System

It consists of the Sun, eight planets and other bodies. The Sun is actually a star around which the planets revolve. The other bodies include moons, dwarf planets, asteroids, comets and meteors. The closest star to our solar system is proxima centauri.

All the planets are spherical in nature due to the effect of gravity.

The planets, according to their distance from the Sun, are

- **Mercury** It is the smallest and fastest orbiting planet.
- **Venus** It is the hottest and brightest planet. It is called **morning star** and **evening star**.
- **Earth** It is our planet. It completes one orbit of the Sun in $365 \frac{1}{4}$ days. Of all the planets, it has the greatest amount of water on its surface. So it is called the water planet and blue planet. It rotates from West to East. So the Sun rises in the East and sets in the West.
- **Mars** It is called the Red planet.
- **Jupiter** It is the largest planet in our solar system.
- **Saturn** It is known as the Ringed planet.
- **Uranus** It is the coldest planet in our solar system.
- **Neptune** It is the farthest planet of our solar system.

☑ Before 2006, Pluto was the farthest. Since then, Pluto has been classified as a 'dwarf planet'.

Asteroids (or Planetoids)

Small planetary bodies that revolve around the Sun and found in between the orbits of Mars and Jupiter. Also known as minor planets.

Meteors and Meteorites

- Meteors are also called as **shooting stars**.
- Meteors are fragments of rocks coming towards the Earth.
- They are formed due to collision among the asteroids.
- Meteors that do not burn up completely in Earth's atmosphere and land on the Earth, are called meteorites.
- Meteorites are composed of various proportions of a nickel-iron alloy (10% nickel and 90% iron) and silicate minerals.

Space Exploration

- The first artificial satellite to orbit the Earth was launched by the USSR. It was named 'Sputnik I'.
- The USSR Cosmonaut, Yuri Gagarin, became the first human in space. USA then launched the Space Shuttle, a reusable spaceship.
- John Glenn was the first human to orbit the Earth. He was a USA astronaut.

- Neil Armstrong, another USA astronaut, became the first human to walk on the Moon.
- India's first satellite launched into space was named Aryabhata. The Indian Space Research Organisation (ISRO) also launched a spaceship to the moon. It was called Chandrayaan.
- This spaceship hoisted the Indian flag on the moon.
- Later on, ISRO launched a satellite called **Mangalyaan** which is now going round the planet Mars in orbit.

Earth

- The Earth is an **oblate spheroid**. It is almost spherical, flattened a little at the poles with a slight bulge at the centre (equator).
- **Perihelion** is the nearest position of the Earth to the Sun.
- **Aphelion** is the farthest position of the Earth from Sun.
- The Earth's interior is composed of three major layers: the **crust**, the **mantle** and the **core**.



Practice Exercise

1. The study of the Universe is known as
(a) Cosmology (b) Geology
(c) Climatology (d) Cosmography
2. Our solar system is a part of which galaxy?
(a) Andromeda (b) Milky Way
(c) Proxima Centauri (d) Ganymede
3. Our solar system consists of sun and
(a) Seven planets (b) Eight planets
(c) Nine planets (d) Ten planets
4. The smallest planet in our solar system is
(a) Earth (b) Venus
(c) Mars (d) Mercury
5. Which amongst the following is the hottest and brightest planet?
(a) Earth (b) Saturn
(c) Mars (d) Venus
6. Earth completes one orbit of the sun in
(a) 365 1/4 days (b) 365 days
(c) 366 days (d) 366 1/4 days
7. Which planet is known as the red planet?
(a) Jupiter (b) Mars
(c) Mercury (d) Saturn
8. Jupiter is the planet in our solar system.
(a) smallest (b) heaviest
(c) largest (d) farthest
9. Which amongst the following is the coldest planet in our solar system?
(a) Uranus (b) Neptune
(c) Saturn (d) Jupiter
10. Since 2006, which planet has been classified as a dwarf planet?
(a) Ganymede (b) Jupiter
(c) Pluto (d) Sirius

11. All the planets are spherical in nature due to the effect of
 - (a) gravity
 - (b) coriolis force
 - (c) magnetic field
 - (d) frictional force
12. The Sun is actually a around which the planets revolve.
 - (a) star
 - (b) planet
 - (c) galaxy
 - (d) asteroid
13. The ringed planet in our solar system is
 - (a) Mars
 - (b) Neptune
 - (c) Jupiter
 - (d) Saturn
14. The Earth rotates from
 - (a) West to East
 - (b) East to West
 - (c) North to South
 - (d) South to North
15. A large number of stars along with gas and dust clouds are known as
 - (a) Universe
 - (b) Galaxy
 - (c) Dwarf planets
 - (d) Meteors
16. The first artificial satellite to orbit the Earth was launched by the
 - (a) Germany
 - (b) China
 - (c) USSR
 - (d) USA
17. What is the name of first satellite launched by any country?
 - (a) Sputnik 1
 - (b) Aryabhata
 - (c) ORBCOMM-FM110
 - (d) GSAT-19
18. Who became the first human to go into space?
 - (a) Edwin Eldrin
 - (b) Neil Armstrong
 - (c) John Glenn
 - (d) Yuri Gagarin
19. Who amongst the following was the first human to orbit the Earth?
 - (a) Scott Kelly
 - (b) John Glenn
 - (c) Chris Had field
 - (d) Tim Peake
20. Neil Armstrong, another USA astronaut became the first human to
 - (a) walk on Mars
 - (b) walk on Venus
 - (c) walk on Moon
 - (d) reach Saturn
21. What is the name of India's first satellite which was launched into space?
 - (a) Aryabhata
 - (b) Sputnik 1
 - (c) Apollo
 - (d) Chandrayaan
22. Name of the spaceship to the Moon launched by ISRO.
 - (a) Apollo 11
 - (b) Chandrayaan
 - (c) Juno
 - (d) Surveyor 3
23. The Mars orbiter mission, a space probe launched by ISRO is also known as
 - (a) Mars space mission
 - (b) Mars mission
 - (c) Chandrayan
 - (d) Mangalyaan
24. The closest star to our solar system is
 - (a) Sirius
 - (b) Proxima centauri
 - (c) Arcturus
 - (d) Betelgeuse
25. Which amongst the following is the nearest galaxy to the Milky Way?
 - (a) Whirlpool Galaxy
 - (b) Messier 81
 - (c) Andromeda Galaxy
 - (d) Cosmos Redshift 7
26. Earth's interior composed of
 - (a) crust
 - (b) mantle
 - (c) core
 - (d) All of these
27. Lunar Eclipse occur when
 - (a) When the Earth comes between the Moon and the Sun
 - (b) When the Sun comes between the Earth and the Moon
 - (c) When the Moon comes between the Earth and the Sun
 - (d) None of the above

Answers

1	(a)	2	(b)	3	(b)	4	(d)	5	(d)	6	(a)	7	(b)	8	(c)	9	(a)	10	(c)
11	(a)	12	(a)	13	(d)	14	(a)	15	(b)	16	(c)	17	(a)	18	(d)	19	(b)	20	(c)
21	(a)	22	(b)	23	(d)	24	(b)	25	(c)	26	(d)	27	(a)						