

## Frequently Asked Questions

### WHO ARE ASTRONAUTS?

Ans: An Astronaut; also known as a cosmonaut is a person specially trained to be a commandant, pilot or a crew member of a spacecraft specially designed for space missions.

In generic terms anyone who travels to space with proper training is considered an Astronaut. Be it [scientist](#), journalist or even a tourist!!!

However, according to NASA, any crew-member who aboard their spacecraft bound for Earth orbit or even beyond in space is called an Astronaut.

The term is derived from Greek word which means space sailor.

NASA has further categorized them into five different types:

- Active Astronaut: the ones who are eligible for flight assignments
- Management Astronaut: these are the current employees but they are no longer eligible for flight assignments
- Astronaut Candidate: also called the Astronaut cops
- Former Astronaut: all the Astronauts of the past
- International Astronauts: the one's from international agencies who are serving or were trained at NASA at some point of time

### WHY SATURN HAVE RINGS?

Ans: Saturn; the sixth planet in the row is a planet which boasts of it's numerous rings surrounding it.

The origin of these rings is not evident yet but studies claim that these rings originated either from some small moon or some passing comet that shredded because of the planet's gravity.

But ironic to the study, these rings are icy, which clashes with the very theory as the moon and comet both contain a great deal of rock, so the formation of ice still remains a mystery.

Since Saturn has a huge number of moons to it (at least sixty); it is for sure that the rings are somehow a result of asteroids crashing into the moons and hence breaking into numerous pieces. The huge number of moons to this planet is also considered to be a resultant of its strong gravitational pull.

With multiple theories trying to explain the reason for the rings; one thing is for sure, is that these rings are spectacular and distinguished.

## **WHAT IS UNIVERSE MADE OF?**

Ans: Until some time back, astronomers thought that the universe was composed of electrons, protons, neutrons, ordinary atoms. However, in the past few decades, this theory has taken a major turn as there is a lot more to this universe than just the basic stuff of life.

The universe is a culmination of three substances: normal matter, dark matter and dark energy.

The normal matter includes all the visible objects in the universe like stars, planets, human beings. These are all made up of protons, neutrons and electrons. Strangely, normal matter constitutes only 4% of the entire proportion of the universe; along with dark matter which constitutes roughly 24% and dark energy is the huge some 70%.

Dark matter is composed of one or more species of sub-atomic particles that interact very weakly with ordinary matter. Dark energy has a gravitational repulsive effect, which results in the flatness of the universe and its accelerated expansion.

The universe still remains unexplored and we don't know how far we have to go to understand our Universe. It is still a box of surprise to us. We don't know what all secrets are waiting to be unlocked.

## **WHAT IS ANDROMEDA GALAXY?**

Ans: Andromeda Galaxy; also known as M31 is a spiral galaxy and is the one major galaxy which is in the vicinity of our milky way and is prominently visible with human eye in the night sky as it is the most distant one and also it is the brightest in the heaven and is 2.3 million light years away. It appears as a smudge of light larger than the full moon.

The best time to look for this galaxy is in northern autumn and late September and early October too.

Till date scientists have discovered 26 black holes in this galaxy.

There are assumptions that several billion years from now, the Milky Way and Andromeda will collide and henceforth all the black holes will reside in a large elliptical [galaxy](#) which will be an outcome of the merge.

So, the bottom line is, this galaxy is something which is rated as one of the most distant things which we can see with the unaided eye too!!!

## **WHAT IS MILKY WAY?**

Ans: A barred spiral galaxy about 100,000 light years across; our home sweet home. Our sun, all planets, the stars are all a part of this galaxy. It got its name derived from its appearance from Earth.

Formed some 12 billion years ago; it has a barred spiral with two major arms in its disk.

Eventually with time our galaxy has grown up by merging with other galaxies. The black hole in the central core of our galaxy contains the mass of almost 4.3 million suns (increasing eventually with ample supply of dust and gas). The black hole can only be viewed by its gravitational effects as it changes and distorts the path of material around. It is surrounded by an enormous halo of hot gases; which further extends for hundreds of thousand light years. This halo is as massive as all the stars in the milky way.

New stars are constantly formed in the arms because of the high amount of dust and gases.

## **WHAT IS HIGGS BOSON'S GOD PARTICLE? WILL IT DESTROY THE UNIVERSE?**

Ans: As per the standard model (the particle physics), the hypothetical quantum field that gives particles their masses is called the higgs field and the particles associated with it is called Higgs Boson (also called God Particle) with a mass of 125GeV and is 126 times the mass of proton; It was discovered in 2012; though the existence of this particle is still a dilemma.

According to the theory of Higgs Boson doomsday, a quantum fluctuation creates a vacuum bubble that expands through space and will eventually wipe out the entire universe.

The scientists, till date are trying to understand the traits of Higgs Boson and what all goes along with it; so it just looks like the beginning of the story; no one knows what future beholds.

## **WAS THERE EVER LIFE ON MARS?**

Ans: Life on mars is till date a speculated topic. The planet has a lot of similarities with Earth; which makes it more obvious.

The climatic conditions at Mars are very cold and since it lacks continental drift, the climate remains unchanged. And because of the cold climate, ice caps have been discovered on this planet. For the first time in the 17th century, scientists discovered these ice caps. In addition to it, the duration of the day is much similar and there are seasonal changes too. Above all Mars has land too with some microbial life (some scientists claims of it and some still disapproves it)

All these speculations about life on this planet is still an illusion as scientists are still favoring and dismissing all the theories. Let's see what the future beholds.

## **WHAT ARE DWARF PLANETS?**

Ans: Dwarf Planets are celestial bodies which have traits similar to regular planets, have enough mass and gravity and are nearly round too.

They are neither plants nor natural satellites.

The major distinguishing character being that they don't have a clear path to revolve around the sun. Their path is full of objects like asteroids and comets.

There are 5 dwarf planets which are recognized till date and these are: Ceres (the largest among all), Pluto (the most famous), Eris, Haumea and Makemake.

Though there are a lot of such planets existing in the universe, let's see how many more get recognized soon.

# WHAT IS SOLAR ECLIPSE?

Ans: Eclipse is the phenomenon where any celestial body is obstructed or shadowed by the movement of another body.

Solar eclipse is the one where the moon passes between Sun and Earth and henceforth the moon partially or completely blocks the sun. For a solar eclipse to occur, the moon's orbit has to cross Earth's ecliptic plane.

Further, there are four types of solar eclipse:

Total Eclipse (when the moon completely shadow's the sun, henceforth only a marginal solar corona is visible).

Annular Eclipse is the one when the sun and moon are in exact line with the Earth and hence the sun appears like a ring.

Hybrid Eclipse is a very rare phenomenon. In this the eclipse appears to be annular in some parts and total eclipse in other parts. The eclipse is annular when it begins and ends.

Partial Eclipse is when only a part of the Sun is covered by the Earth.

The type of eclipse majorly depends on the distance of Sun and Moon from the Earth.

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