

## SPACE ODYSSEY



### What is the Aura mission?

Aura mission was launched on July 15, 2004. It is part of NASA's Earth Science Projects Division, a programme dedicated to monitoring the extent, causes, and consequences of environmental change across the planet.

### What is the objective of the mission?

Aura's objective is to study the chemistry and dynamics of the Earth's atmosphere with emphasis on the

upper troposphere and lower stratosphere.

### Why is the Aura mission significant?

Aura will help scientists understand how atmospheric composition affects and responds to Earth's changing climate. The satellite will help reveal the processes that connect local and global air quality. It will also track the extent Earth's protective ozone layer is recovering.

### What are the findings of the mission?

The findings have been relevant to the loss of ozone in the polar stratosphere; water vapour and cloud ice processes in the upper troposphere; measurements of stratospheric chlorine and bromine, two gases involved in the destruction of ozone; the dynamics and transport of chemicals in the stratosphere; and pollution in the upper troposphere, etc.

## Largest storm in the solar system

### ASTRO FACT

The Red Spot is the largest known storm in the solar system. This is a huge, high storm that has been swirling around Jupiter for hundreds of years. With a diameter of 15,400 miles, it is almost twice the size of the entire Earth and one-sixth the diameter of Jupiter itself. Although there are many storms swirling around Jupiter, nothing is as large and long lasting as the Great Red Spot



## MYSTIQUE UNIVERSE



### What is a binary star?

A binary star is a star system consisting of two stars orbiting around each other. The brighter star is called primary and its companion star is called secondary. Located in the Big Dipper constellation, the two stars, Alcor and Mizar were the first binary stars ever known.

### What are the types of binary stars?

There are two kinds of binary or twin stars. One is visual binaries which can be seen through a telescope as two stars revolving around each other. It may take 100 years for one star to travel around the other. The other binary stars are the spec-

troscopic binaries which look like single stars, even when viewed through a telescope. It takes a spectroscope to identify them. These stars complete their revolutions around each other in a few days to a few months.

### What is the significance of binary stars?

Binary star systems are very important in astrophysics because calculations of their orbits allow the masses of their component stars to be directly determined. This in turn allows other celestial parameters, such as radius and density, to be indirectly estimated. This also determines an empirical mass-luminosity relationship (MLR) from which the masses of single stars can be estimated.

### How are binary stars formed?

A binary star system emerges out of a cloud of gaseous material collapsing and forming more than a single star at the same time in a small proximity. This type of a collapsing event does not necessarily form only two stars. It can form more than two, but it all depends on their unique environment in which the stars form.

## SPACE TECH

### Shuttle Thermal Protection System



The Space Shuttle thermal protection system (TPS) consists of a combination of materials and technologies that work together to protect the spacecraft and its human occupants. The TPS is the barrier that protects the Space Shuttle Orbiter from the scorching heat during atmospheric reentry. The TPS also protects the spacecraft from the heat and cold of space while in orbit. The TPS covers essentially the entire orbiter surface, and consists of seven different materials in varying locations based on amount of required heat protection.

## Moon Show

■ On February 14, 2010 at 02:51 in the morning, the new moon will adorn the night sky. The new moon is the lunar phase that occurs when the Moon, in its monthly orbital motion around Earth, lies between Earth and the Sun. At this time, the dark, unilluminated portion of the Moon faces almost directly towards the Earth, making the Moon invisible to the naked eye.

### SKY VIEW

■ It will be a beautiful full moon night on February 28, 2010. Full moon is a lunar phase that occurs when the Moon is on the opposite side of the Earth from the Sun. At this time, the hemisphere of the Moon that is facing the earth is almost fully illuminated by the Sun and appears round.

