



KAMARAJ IAS ACADEMY
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First National Space Day

Published On: 23-08-2024

Context:

India to celebrate its **First National Space Day**, *marking the anniversary of Chandrayaan-3's historic moon landing.*

About:

The Indian government officially designated **August 23 as National Space Day** in recognition of this significant accomplishment, reflecting India's expanding capabilities in space exploration and highlighting the vital role of space science and technology in national development.

- The **Chandrayaan-3 mission, launched from the Satish Dhawan Space Centre in Sriharikota**, Andhra Pradesh, achieved a safe and **soft landing of the Vikram Lander on the Moon's surface.**
- This achievement **signifies a historic milestone for the nation**, as India became "**only the fourth country globally to successfully land a rover on the Moon**" and the "**first to do so in the southern polar region**".
- Accompanied by the **Pragyaan Rover, the Vikram Lander touched down at a site** designated as '**Shiv Shakti.**'
- Following the successful landing, the Pragyaan Rover was deployed, further advancing India's exploration efforts on the lunar surface.
- **The theme for National Space Day 2024** is "Touching Lives while Touching the Moon: India's Space Saga,".
- It highlighting the broader impact of space exploration on society and emphasising how advancements in space technology can enhance the quality of life on Earth.
- The day aims to engage the public and inspire future generations to pursue careers in **science, technology, engineering, and mathematics (STEM).**
- National Space Day serves not only as a celebration of India's achievements in space but also as a platform to promote awareness and education about the importance of space exploration.

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CHANDRAYAAN-3 MOON MISSION

Chandrayaan-3, the succeeding mission to Chandrayaan-2, is set to launch on Friday, July 14, 2023 at 2.35 pm



Take off from Sriharikota

LVM3-M4 Vehicle

Height **43.5 m**

Lift-off Mass **642 t**

100 km
Circular Lunar Orbit

Lunar Orbit Insertion

EBNs

Integ
Modu

Lunar Transfer

Mission life
1 Lunar day
(14 Earth days)



Grapp

About Chandrayaan-3 Mission:

Chandrayaan-3 is India's third lunar mission and *second attempt at achieving a soft landing on the moon's surface.*

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On July 14, 2023, Chandrayaan-3 took off from the Satish Dhawan Space Centre in Sriharikota. The spacecraft seamlessly entered lunar orbit on August 5, 2023. The historic moment unfolded when the lander made a successful touchdown near the Lunar south pole on Aug 23, 2023.

- **Mission Objectives :**

- To **demonstrate Safe and Soft Landing** on Lunar Surface
- To **demonstrate Rover roving** on the moon and
- To **conduct in-situ scientific experiments.**

- **Components:**

- Chandrayaan-3 is a *three-component mission* consisting of a *Propulsion Module, a Lander Module, and a Rover Module.*
- **The Propulsion Module :**It will carry the lander and rover configuration till 100 km lunar orbit. This propulsion module has *Spectro-polarimetry of Habitable Planet Earth (SHAPE)* payload to study the spectral and Polarimetric measurements of Earth from the lunar orbit.
- **The Lander Module:** *The Lander Module (Vikram)* is carrying a scientific payload that includes a suite of instruments to study the lunar surface and atmosphere *Chandra's Surface Thermophysical Experiment (ChaSTE)* to measure the thermal conductivity and temperature; *Instrument for Lunar Seismic Activity (ILSA)* for measuring the seismicity around the landing site; *Langmuir Probe (LP)* to estimate the plasma density and its variations. A passive *Laser Retroreflector Array* from NASA is accommodated for lunar laser ranging studies.
- **The Rover Module:** The *Rover Module (Pragyan)* is carrying a suite of instruments to study the lunar surface and subsurface which includes *Alpha Particle X-ray Spectrometer (APXS)* and *Laser Induced Breakdown Spectroscopy (LIBS)* for deriving the elemental composition in the vicinity of landing site.

- **Major Findings:**

- **Lunar Surface Temperature Surprise:** Chandra's Surface Thermophysical Experiment (ChaSTE) *measured temperatures reaching 70 degrees Celsius*, surprising scientists who expected temperatures between 20 to 30 degrees Celsius.
- **Lunar Surface Elements Confirmed:** *The Laser-Induced Breakdown Spectroscopy instrument onboard 'Pragyan' rover confirmed the presence of Sulphur on the lunar surface* near the south pole. Elements such as Aluminum, Calcium, Iron, Chromium, Titanium, Manganese, Silicon, and Oxygen were also detected.