

28th June DSC

Ax-4 Docking Success: Shukla Steps into the ISS

India Enters the International Space Station

Group Captain Shubhanshu Shukla has become the first Indian national to set foot inside the International Space Station (ISS).

He participated in the Axiom Mission 4 (Ax-4), a commercial flight arranged by Axiom Space. Flying aboard SpaceX's Dragon spacecraft, the crew successfully docked with the ISS over the North Atlantic Ocean at 4:01 p.m. IST on June 27, 2025.

GS Paper 3 – Space Technology

Mission Highlights

Shukla piloted the mission, underscoring India's advancing expertise in crewed space missions.

As the spacecraft circled Earth, he addressed the country with a "Namaskar from space," capturing public imagination.

This milestone represents both India's international collaboration and its pursuit of independent human spaceflight.

Gaganyaan Connection

Shukla is among the four astronauts chosen for India's Gaganyaan mission, anticipated no earlier than 2026.

His colleague, Prasanth Nair, was on the Ax-4 backup crew and is also designated for Gaganyaan.

ISRO reportedly spent over ₹500 crore to secure astronaut training slots with Axiom Space.

Scientific and Strategic Purpose

During their two-week stay aboard the ISS, the Ax-4 crew will conduct multiple experiments, including eight contributed by ISRO.

This mission doubles as advanced training in life-support systems and space operations, critical preparation for India's upcoming human flights.

International Collaboration

Axiom Space, a U.S.-based private firm, organises commercial trips to the ISS with NASA and SpaceX support.

Originally set to launch on May 29, 2025, the mission faced several delays, finally taking off on June 26.

National Significance

The mission has been widely celebrated in India as a historic leap in human spaceflight participation.

Union Minister Jitendra Singh described it as a moment "watched with excitement and high expectations."

Conclusion

Group Captain Shukla's successful arrival at the ISS through Ax-4 is both a symbolic and operational stride forward, strengthening India's readiness for Gaganyaan and deepening global space partnerships.

Is Voter Registration Facing Fraud Allegations?

Electoral Roll Expansion in Maharashtra

Between the 2024 Lok Sabha polls and Assembly elections, Maharashtra's voter rolls swelled by 40 lakh names—a dramatic rise compared to the 32 lakh additions over the prior five years. Analysts found this spike inconsistent with demographic trends, especially given slowing population growth and lower fertility rates.

GS Paper 2 – Electoral Reforms

Experts' Views

Praveen Chakravarty

He argued the sudden surge surpasses normal enrolment patterns.

He questioned whether the verification process was sufficiently rigorous.

He recommended publishing voter data in machine-readable formats for transparency.

He also urged that polling stations release CCTV footage after 5 p.m., citing irregular spikes in turnout.

R. Rangarajan

While acknowledging the increase was unusually large, he noted comparable jumps have occurred before elections in other years.

He attributed part of the rise to quarterly deadlines for enrolment.

He stressed that both wrongful inclusions and missing eligible voters deserve scrutiny.

Transparency and involvement of all parties are essential to credibility, he added.

Election Commission's Stand

The ECI insisted manipulation was virtually impossible thanks to multiple safeguards.

It initiated a Special Intensive Revision (SIR) to clean up electoral rolls in Bihar and other states.

The Commission also pointed out that political parties could use appeals mechanisms if they detected discrepancies.

Wider Electoral Roll Challenges

Discrepancies often stem from:

- Delays in field verification
- Shifting cut-off dates for enrolment
- Data management inefficiencies

Growing demands include:

- Releasing rolls in accessible digital formats
- Improving tracking of additions and deletions
- Minimising duplication without disenfranchising legitimate voters

Ongoing Measures and Suggestions

Upcoming revisions aim to:

- Add all eligible citizens

- Remove ineligible or duplicate entries
- Increase transparency

Experts propose:

- Independent audits
- Public awareness drives
- Better cooperation between the ECI and all political groups

Conclusion

The debate underscores the need for transparent, verifiable electoral lists. While questions about recent patterns persist, experts converge on solutions rooted in data openness, institutional reform, and collaborative oversight rather than mere accusations.

What Triggered the Keeladi Excavation Dispute?

Background

Keeladi, an archaeological site along Tamil Nadu's Vaigai River, has produced over 7,500 artefacts since its discovery in 2014 by archaeologist K. Amarnath Ramakrishna. Findings—including brick buildings and drainage systems—suggest an urban settlement around the 2nd century BCE, aligning with the Sangam age.

GS Paper 1 – Heritage and Culture

Scientific Importance

The site's chronology was established using carbon dating and stratigraphy. Notably, no religious symbols were found, pointing to a secular civic lifestyle. The excavation deepened understanding of urbanisation and literacy in ancient South India.

Report Submission

In 2021, Ramakrishna submitted a comprehensive 982-page report covering the first excavation phases (2014–2016). It detailed dating evidence and excavation methods.

ASI's Objections

After a prolonged review, ASI requested revisions in early 2024, questioning the artefacts' dating and stratigraphic layers. Ramakrishna declined to modify the report, asserting that it complied with archaeological protocols like Accelerator Mass Spectrometry (AMS).

Administrative Developments

In June 2024, Ramakrishna was reassigned to the National Mission on Monuments and Antiquities (NMMA) in Greater Noida.

Continued Research

Since 2019, Tamil Nadu's archaeology department has conducted further excavations and published new findings. A museum dedicated to Keeladi now showcases artefacts and educates visitors.

Conclusion

Keeladi has reshaped knowledge about early South Indian urban life.

Debate over dating and interpretation is part of the normal scientific review process.

Ongoing studies aim to further unravel the site's rich history.

Which Cancer Drugs Are Most Widely Used?

Quality Concerns

A global probe revealed that numerous cancer drugs—distributed to over 100 countries—failed quality benchmarks, raising alarms over patient safety and treatment reliability.

GS Papers 2 & 3 – Health & Science

Basics of Chemotherapy

Cancer arises when gene mutations trigger uncontrolled cell growth.

Chemotherapy drugs disrupt DNA synthesis, preventing cancer cells from multiplying, while trying to limit harm to healthy cells.

Common Chemotherapy Agents

1. Cisplatin

- *Action:* Damages cancer cell DNA.
- *Uses:* Testicular, ovarian, lung, bladder cancers.
- *Side Effects:* Kidney issues, nausea, hearing loss, immune suppression.

2. Oxaliplatin

- *Similar to:* Cisplatin.
- *Uses:* Advanced colorectal cancer.
- *Side Effects:* Comparable to cisplatin.

3. Cyclophosphamide

- *Uses:* Breast cancer, lymphoma, leukemia, sarcoma.
- *Mechanism:* DNA disruption, immune suppression.
- *Side Effects:* Low white blood cells, bladder irritation, infections.

4. Doxorubicin

- *Source:* Derived from Streptomyces bacteria.
- *Uses:* Breast cancer, sarcoma, leukemia, lymphoma.
- *Side Effects:* Heart damage, hair loss, infection risk.

5. Methotrexate

- *Uses:* Leukemia, lymphomas, solid tumors.

- *Mechanism:* Inhibits DNA synthesis via folate blockage.
- *Side Effects:* Bone marrow suppression (requires leucovorin rescue).

6. Leucovorin

- *Role:* Not a chemo drug itself; used to:
 - Protect normal cells during methotrexate therapy.
 - Enhance effects of other regimens.

Common Severe Toxicities

- Organ damage (kidney, heart)
- Hair loss, skin reactions
- Immune suppression, infection risks

Conclusion

Chemotherapy saves lives but is extremely toxic.

This investigation highlights gaps in global pharmaceutical oversight, especially in poorer regions.

Stronger quality controls and regulatory vigilance are essential.

Mother Tongue Instruction: CBSE's Clarification

Policy Context

NEP 2020 recommends mother tongue or local language as the medium of instruction until at least Class 5 to boost learning.

CBSE has issued guidelines to help schools gradually implement this policy.

GS Papers 1 & 2 – Society & Education

Metro School Challenges

In urban schools with students from diverse linguistic backgrounds, there is no single dominant language.

Switching entirely to mother tongue instruction could confuse students and complicate teaching.

No Immediate Enforcement

CBSE confirmed there is no compulsion for instant adoption of mother tongue teaching. No penalties or withdrawal of affiliation will apply at this stage.

Implementation Roadmap

Schools are to:

- Map students' language backgrounds.
 - Consider section-wise grouping to match languages.
- CBSE is hosting webinars and workshops to support educators.

Key Message

While NEP's emphasis on mother tongue remains, the approach is consultative and gradual, respecting the reality of multilingual classrooms.

Simultaneous Elections: Not Constitutionally Fixed**Constitutional Interpretation**

Free and fair elections are a basic constitutional feature, but staggered polls are not. Former CJI Chandrachud argued that the Constitution does not require elections to be held separately to preserve fairness.

GS Paper 2 – Constitution & Elections**On Voter Maturity**

Assuming that voters cannot distinguish between state and national issues insults their intelligence and undermines universal adult franchise.

Regional Parties' Concerns

While simultaneous elections could pose challenges for smaller parties, Chandrachud argued these difficulties are not unique to election timing.

Parliamentary Review

His views will be presented to the committee reviewing the 129th Amendment Bill and related legislation.

Other ex-CJIs have also voiced concerns about aspects of the proposals.

Conclusion

Chandrachud supports the legal viability of simultaneous polls, while acknowledging that practical and political considerations must be addressed to safeguard fair representation.

Jal Jeevan Mission: Delays and Data Issues**Mission Overview**

Launched in 2019 to provide tap water to all rural households by 2024.

Original target: 19.3 crore homes; only 16% had connections then.

GS Paper 2 – Governance**Progress and Revision**

By March 2024, coverage reached 80%.

Later assessments found an additional 4 crore households needing coverage.

This expansion clashed with the unchanged official target data, creating inconsistencies.

Implementation Challenges

Groundwater shortages forced reliance on surface water, requiring larger infrastructure.

Errors by contractors and technical hurdles caused delays.

Funding

₹3.6 lakh crore has been spent since launch.

2024–25 budget allocation: ₹70,000 crore, but less than a third was utilised by February 2025.

Deadline Extension

Given the expanded scope, the deadline has been moved to 2028.
Transparency issues remain due to outdated target figures.

Priorities

- Sustainable water sources
- Timely infrastructure completion
- Accurate reporting
- Better budget utilisation

Counting Every Birth and Death: Asia-Pacific Commitment

Regional Declaration

Asia-Pacific countries signed a pact in Bangkok to achieve universal birth and death registration by 2030, continuing the CRVS Decade started in 2015.

GS Papers 2 – International Governance

Progress

Between 2012 and 2022:

- Unregistered children under five dropped by 60%.
- Over 90% birth registration achieved in 29 countries.

Why It Matters

Birth registration secures identity and rights; death registration helps legal closure and statistics.

Tied to SDG 16.9 (universal legal identity).

India's Advances

Birth registration rose from 86% to 96%.

Reforms included:

- Digital registration
- DigiLocker integration
- Recognition of surrogate and adopted children

Challenges

Persistent gaps stem from:

- Bureaucratic hurdles
- Low awareness
- Coordination failures

Focus to 2030

- Inclusive, accessible registration
- Digital upgrades
- Legal protections for privacy and equity

28th June Daily MCQs:

1. Question

Which countries are among the principal collaborators in the International Space Station (ISS) programme?

1. United States
2. Russia
3. China
4. Japan
5. European Union

Select the right answer:

- (a) 1, 2, and 3 only
- (b) 1, 2, 4, and 5 only
- (c) 1, 3, 4, and 5 only
- (d) All of the above

Correct Answer: (b) 1, 2, 4, and 5 only

Explanation:

China does not participate in the ISS project, as it has developed its own Tiangong space station. The United States, Russia, Japan, and the European Union are official partners in the ISS collaboration.

2. Question

The archaeological site of Keeladi is estimated to belong to which historical phase?

- (a) Gupta Period
- (b) Vedic Period
- (c) Sangam Period
- (d) Mauryan Period

Correct Answer: (c) Sangam Period

Explanation:

Findings from Keeladi have been dated to roughly the 2nd century BCE, aligning with the Sangam era prominent in early Tamil culture and literature.

3. Question

Cisplatin, Oxaliplatin, and Cyclophosphamide, which have been in recent headlines, are primarily utilized for:

- (a) Cancer therapy in clinical settings
- (b) Antifungal treatment
- (c) Blood sugar management
- (d) Immunization against viral infections

Correct Answer: (a) Cancer therapy in clinical settings

Explanation:

These medicines are chemotherapy agents widely used in oncology. They came under review lately due to concerns over their manufacturing quality.

4. Question

Regarding the Jal Jeevan Mission, consider the following statements:

1. The mission aims to supply each rural household with 55 litres of safe drinking water per person daily.
2. The initial coverage target of 19.3 crore households has been formally increased by an additional 4 crore households.
3. Constructing surface water systems generally takes longer and costs more than relying on groundwater sources.
4. Delays in progress have been partly due to underutilised budget allocations.

Which statements are correct?

- (a) 1, 3, and 4 only
- (b) 1 and 2 only
- (c) 2, 3, and 4 only
- (d) 1, 2, 3, and 4

Correct Answer: (a) 1, 3, and 4 only

Explanation:

Statement 2 is inaccurate because the official target number has not been updated. The other statements accurately reflect program data and reporting on implementation challenges.

5. Question

About the birth and death registration measures under the CRVS Decade, consider the following:

1. Birth registration is essential for accessing services such as schooling, healthcare, and protection from early marriage.
2. India's CRVS Decade initiatives relied solely on manual processes and lacked any digital upgrades.

Which of the statements is/are correct?

- (a) Only Statement 1
- (b) Only Statement 2
- (c) Both Statements 1 and 2
- (d) Neither Statement 1 nor 2

Correct Answer: (a) Only Statement 1

Explanation:

India did adopt digital tools under the CRVS Decade, including online registration systems and integration with DigiLocker. Therefore, Statement 2 is incorrect, while Statement 1 is accurate.

