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The Hindu Important News Articles & Editorial For UPSC CSE

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Add- 21/B, Om Swati Manor Chs, J.K. Sawant Marg, Opp. Shivaji Natyamandir, Behind Cambridge Showroom, Dadar (West) Mumbai – 400028
Con.- 09820971345, 9619071345, 9223209699
G-mail-lakshyaacademymumbai@gmail.com

Page 02 : GS II : Social Justice / Prelims Exam

In a historic milestone for urban education in India, Chandigarh has been officially declared a "fully literate Union Territory" after achieving a literacy rate of 99.93%. Announced by the Governor of Punjab and Administrator of Chandigarh, Gulab Chand Kataria, this feat makes Chandigarh the sixth State/UT in India and the second Union Territory (after Ladakh) to cross this functional literacy threshold. This achievement is a direct outcome of the ULLAS – Nav Bharat Saaksharta Karyakram, aligning with the goals set by the National Education Policy (NEP) 2020.

Chandigarh achieves 99.93% literacy, gets 'fully literate U.T.' tag

The Hindu Bureau
CHANDIGARH

Chandigarh attained 99.93% literacy rate, thus making it a fully literate Union Territory, said Gulab Chand Katari, the Governor of Punjab and Administrator of Chandigarh. It is the sixth State/U.T. in the country and the second Union Territory to achieve the feat.

To celebrate this achievement, Chandigarh's Education Department held a "felicitation of neo-literates", where newly literate individuals were honoured. Mr. Kataria, the chief guest at the event, described the achievement as a historic moment for Chandigarh. He said the success achieved under the Understanding Lifelong Learning for All in Society (ULLAS) has helped the city surpass the 95% literacy benchmark set under the National Education Policy (NEP) 2020.

Mr. Kataria said Chandigarh's literacy rate has increased from 93.7% to 99.93%, with 15,556 citizens participating in the programme and 14,711 successfully clearing the literacy assessment. The Governor also highlighted the remarkable leap in women's literacy from 90.7% to 99.89%, calling it a significant step towards women's empowerment.

Key Highlights of the Achievement

The Literacy Leap: The literacy rate in Chandigarh surged from 93.7% to an impressive 99.93%.

Women's Empowerment: A remarkable jump was recorded in female literacy, rising from 90.7% to 99.89%, effectively bridging the gender gap in the city.

Target Population: 15,556 citizens participated in the literacy programme, with 14,711 successfully clearing the official literacy assessment.

Benchmark Surpassed: The achievement surpasses the 95% literacy benchmark prescribed under the NEP 2020 for a region to be considered "fully literate."

The ULLAS Initiative: A Strategic Analysis

The success is primarily attributed to the ULLAS (Understanding Lifelong Learning for All in Society) initiative.

Features of ULLAS (Nav Bharat Saaksharta Karyakram)

Target Group: Adults (aged 15 and above) who could not attend formal schooling.

Implementation Pillars:

Foundational Literacy and Numeracy (FLN): Basic reading, writing, and math.

Critical Life Skills: Financial literacy, digital literacy, legal awareness, and healthcare.

Vocational Skills: Linking literacy with employability.

Modus Operandi: The scheme operates on the spirit of Volunteerism (Kartavyabodh), turning literacy into a "Jan Andolan" (People's Movement). It utilizes a hybrid model (online and offline) via the ULLAS Mobile App.

Significance

1. Governance and Social Justice

SDG Alignment: This contributes directly to Sustainable Development Goal 4 (Quality Education), which aims to ensure inclusive and equitable quality education for all.

Inclusive Growth: By targeting the 15+ age group, the government is reducing the "educational debt" of the past, ensuring that the elderly and marginalized are not left behind in a digital economy.

2. Human Development

Demographic Dividend: Literacy is the bedrock of a productive workforce. High literacy in a UT like Chandigarh enhances its potential to contribute to India's goal of becoming a $5 Trillion economy.

Digital Inclusion: Modern literacy includes digital and financial skills, which are essential to protect citizens from cyber-fraud and to ensure the success of Direct Benefit Transfers (DBT).

Static Section: Education in India

Feature	Details
Constitutional Provision	Article 21A (Right to Education as a Fundamental Right); Article 45 (DPSP - Early Childhood Care).
7th Schedule	Education is in the Concurrent List (42nd Amendment, 1976).
National Education Policy 2020	Replaces the 1986 policy. Aims for 100% Youth and Adult Literacy by 2030.
Census 2011 Data	National Literacy Rate: 74.04% (Male: 82.14%; Female: 65.46%).
Top Literate States (2025/26)	Kerala, Mizoram, Tripura, Goa, Himachal Pradesh, Ladakh (UT), and now Chandigarh (UT).

Conclusion

Chandigarh's transition to a fully literate UT is not just a statistical victory but a testament to the efficacy of community-led volunteerism under the ULLAS framework. While the city has reached the "99.93%" mark, the challenge now shifts from attaining literacy to sustaining learning through "Lifelong Learning" modules. This success serves as a scalable model for other States/UTs to bridge their own literacy gaps, bringing India closer to the vision of a "Viksit Bharat" by 2047.

UPSC Prelims Exam Practice Question

Ques: With reference to the ULLAS – Nav Bharat Saaksharta Karyakram, consider the following statements:

1. It is aimed at providing literacy to adults aged 15 years and above who missed formal schooling.

2. The programme is implemented on the principle of volunteerism (Kartavyabodh).

3. It focuses only on basic reading and writing skills.

Which of the statements given above is/are correct?

A. 1 and 2 only

B. 2 only

C. 1 and 3 only

D. 1, 2 and 3

Ans: A)

Ques: Literacy is the foundation of human development and demographic dividend. Discuss with reference to India's efforts towards 100% adult literacy by 2030 under NEP 2020. **(150 Words)**

Page 03 : GS III : Environment / Prelims Exam

In a landmark development for Indian entomology, researchers have published the first-of-its-kind comprehensive checklist of fireflies (Coleoptera: Lampyridae) in India. Published in the journal Zootaxa on March 10, 2026, the study compiles data spanning over 260 years (1881–2025). This research provides a foundational taxonomic framework for a species that has remained largely "invisible" in modern scientific literature despite its ecological and cultural significance.

Researchers publish first-of-its-kind checklist on fireflies across India

Shilpa Elizabeth
BENGALURU

Researchers have brought out a first-of-its-kind checklist of fireflies in India by putting together data from more than 260 years of scattered scientific records from 1881 to 2025.

A study published in the *Zootaxa* journal on March 10 documents 92 species across 27 genera, with more than 60% of them endemic.

According to the authors of the study, many of these species were described in the 1800s and have never been studied again in modern taxonomy, leaving large gaps in understanding the glowing insects. The paper titled 'A checklist of fireflies (Coleoptera: Lampyridae) from India' was authored by Parvez, Akshay Kumar Chakravarthy, Oliver Keller, Devanshu Gupta and Amlan Das.

The researchers note that while there have been attempts to build research on firefly taxonomy, the results have been fragmented so far. Parvez, lead author of the paper, notes that more than 50 species have not been recorded again from India since their original descriptions.

"In light of the lack of accessible resources for the Indian fireflies, a literature survey was taken to produce a modern checklist of species from the subcontinent. This checklist of the Lampyridae of India is presented as a first step to remedy the situation, and to provide researchers with a resource to conduct research on fireflies," reads the study.


Lakhs of fireflies seen at the Anamalai Tiger Reserve in Tamil Nadu. FILE PHOTO

The checklist provides names of species, names of scientists who documented them originally and subsequently, years of documentation, and geographies in which the species are found. Fireflies were found in 22 States, including one Union Territory, and it was found that several species occurred across geographies.

According to Parvez, the insufficiency of modern literature on fireflies has been a major stumbling block for researchers who to study the insects.

It took close to three years for the scientists to compile the checklist.

Key Findings of the Study

Species Diversity: The study documents 92 species across 27 genera.

High Endemism: More than 60% of the documented firefly species are endemic to India, meaning they are found nowhere else in the world.

Geographic Spread: Fireflies were recorded across 22 States and one Union Territory, showing a wide but fragmented distribution.

The "Discovery Gap": Over 50 species have not been recorded or sighted since their original description in the 1800s, highlighting a massive gap in modern monitoring.

Historical Data: The researchers synthesized scattered records to create a "modern taxonomy," providing a resource that includes species names, original discoverers, and geographical data.

Significance

1. Biodiversity & Taxonomy

Taxonomic Baseline: For any conservation effort to succeed, a "baseline" is required. This checklist acts as that baseline, allowing scientists to identify which species are thriving and which are nearing extinction.

Invertebrate Conservation: While India focuses heavily on "Mega-Fauna" (Tigers, Elephants), this study shifts the spotlight to invertebrates, which play crucial roles in the food chain and as environmental indicators.

2. Ecological Importance of Fireflies

Environmental Indicators: Fireflies are highly sensitive to environmental changes. Their presence indicates a healthy ecosystem with low levels of light and chemical pollution.

Predatory Role: In their larval stage, many fireflies are predators of snails and slugs, helping control populations that might otherwise damage crops.

3. Threats to Fireflies

Light Pollution: Fireflies rely on bioluminescence for mating. Excessive artificial light interferes with their signaling, leading to population declines.

Habitat Loss: Urbanization and the clearing of damp, leaf-littered areas (essential for larvae) destroy their breeding grounds.

Pesticides: As ground-dwellers during their larval stage, they are highly susceptible to agricultural chemicals.

Static Section: General Science & Environment

Category	Details
Order/Family	Order: Coleoptera (Beetles); Family: Lampyridae.

Category	Details
Bioluminescence	Produced by a chemical reaction involving luciferin (a pigment) and luciferase (an enzyme) in the presence of oxygen.
Efficiency	Firefly light is "cold light"; nearly 100% of the energy is emitted as light, unlike an incandescent bulb which wastes most energy as heat.
Endemism	Species unique to a defined geographic location. High endemism in India (60% for fireflies) makes conservation a national priority.
Key Location	Anamalai Tiger Reserve (TN) is famous for mass firefly congregations (synchronous flashing).

Conclusion

The creation of the firefly checklist is a "first step" toward a larger goal of insect conservation in India. By organizing nearly three centuries of scattered data, researchers have moved fireflies from the realm of folklore into the realm of rigorous science. For a country aiming to meet its Kunming-Montreal Global Biodiversity Framework targets, such documentation is essential to protect the "small things that run the world."

UPSC Prelims Exam Practice Question

Ques: In the context of biodiversity conservation, the term "endemism" refers to:

A. Species that migrate seasonally across continents

B. Species restricted to a specific geographic region

C. Species introduced from another country

D. Species that are domesticated by humans

Ans: B)

UPSC Mains Exam Practice Question

Ques: Light pollution has emerged as an under-recognized threat to biodiversity. Discuss its impact with special reference to firefly populations. **(150 Words)**

Page 07 : GS III : Science and Tech / Prelims Exam

Researchers at ETH Zurich and the Technical University of Munich have achieved a milestone in Synthetic Biology by engineering a "Trojan Horse" mechanism in bacteria. By modifying ABC transporters (nutrient gates), they can now successfully smuggle artificial amino acids into bacterial cells. This allows for the production of "Designer Proteins"—complex molecules that do not exist in nature but can perform specific tasks, such as delivering drugs to precise locations in the human body.

Scientists rewire bacteria to build 'designer' proteins on demand

By engineering a protein called a 'nutrient transporter', scientists have found a way to smuggle artificial amino acids into bacterial cells; the feat allows them to manufacture complex designer proteins that can carry drugs to precise locations inside the body or perform multiple different tasks at the same time

Joel P. Joseph
BENGALURU

Researchers have found a way to hijack the natural protein-making facilities of bacteria to manufacture specific proteins of interest. They did this by turning a 'nutrient gate' on a bacterial cell into a Trojan horse that could ferry artificial amino acids into cells to make these proteins.

The study, conducted by teams at ETH Zurich in Switzerland and the Technical University of Munich in Germany, was published in *Nature*.

All proteins are made of some combination of the 20 natural amino acids. In the lab, chemists can also synthesise thousands of artificial amino acids, many of which have completely new properties. For example, if an amino acid called p-azido-L-phenylalanine can be built into a protein, it would allow scientists to attach drugs to the protein at a precise spot, helping it treat some disease.

The challenge however has been to get cells' protein-making machines to use these artificial amino acids.

Idea and bottleneck

In the 1980s, Peter Schultz and his colleagues at the University of California, Berkeley, laid the foundations of incorporating artificial amino acids into proteins at specific sites. Over the years, scientists have expanded this toolkit to incorporate artificial amino acids in proteins that cells make.

Yet one problem has persisted: the struggle to get enough artificial amino acids into the cell. Most lab-made amino acids struggle to cross the cell membrane and enter the cytoplasm, where the ribosomes synthesise proteins. This is because the side chains on artificial amino acids are very water-loving whereas the core of the cell-membrane is water-repelling.

To solve this problem, scientists have used one of three approaches in the past: (i) adding large concentrations of artificial amino acids in the medium so they passively cross the cell membrane; (ii) engineering membrane-binding proteins to smuggle small peptides (short chains of amino acids) across the cell membrane and break them down to amino acids once inside the cell; or (iii) engineering metabolic pathways within the cells to produce artificial amino acids inside the cells.

These methods showed some progress but they were still specific to certain amino acids. They couldn't be generalised.

In the new study, the researchers pinned down the exact molecule ferrying the peptides into the cell. In the absence of the transporter – the main bacterial system that normally imports small protein fragments as food – the cells almost completely lost the ability to use the artificial amino acids bound to the peptides. That was a sign this specific molecule was the smuggler. Once the peptides were inside, the cell's own protein-cutting enzymes unpacked them.

The researchers were able to confirm this: when they removed the enzymes that normally cut peptides into individual amino acids, the cell's protein production dropped. Taken together, the transporter brought the cargo in, then ordinary enzymes freed the artificial amino acid so the cell's ribosome could use it.

Across the membrane

Kathrin Lang and her colleagues at ETH Zurich started from the same idea: by attaching the artificial amino acid to a short peptide. But this group pushed the idea further in the bacteria *Escherichia coli*.

Laasya Samhita, assistant professor of biology at Ashoka University in Sonepat, explained that the group engineered an ABC transporter, a specific membrane protein that imports other proteins into the cell, using directed evolution to take up peptides carrying artificial amino acids.

The ABC transporter normally transports tripeptides (i.e. three amino acids) and tetrapeptides (four amino acids) into the cell as sources of nutrients. Dr. Lang and co. designed tripeptides and tetrapeptides in which they hid an artificial amino acid between two natural amino acids, thus causing the transporter to smuggle artificial amino acids into the cell. Once inside, the myriad peptide-cleaving enzymes inside the cell chopped them into individual amino acids, making artificial amino acids available for cells to make new proteins.

The recent study has also shown that the approach could deliver two different artificial amino acids, allowing a single protein to carry two engineered features at different positions

Unlike previous reports, this study engineered the transporter to alter a protein located in the space between the inner and the outer membranes of the bacterial cell. The researchers first identified residues that clamped onto the cargo. Then they prepared mutants of the transporter that would take up 10x more amounts of unconventional amino acids than an unmodified counterpart. This is double the efficiency in the uptake of artificial amino acids when compared to previous studies.

Easier to use

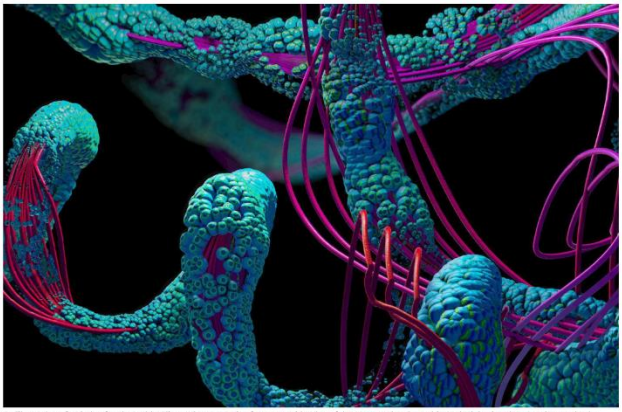
The findings matter because in many standard lab broths, there are already lots of natural peptides floating around, and they all compete for the same transporter, reducing how much of the cargo is smuggled inside the cell. So the researchers evolved the transporter step by step to make sure it worked even in these crowded conditions, repeatedly selecting bacterial cells that imported the artificial amino acids' peptides best. Then they built the improved version into the bacteria's genomes. The resulting system, they reported, was easier to use to produce proteins in a routine way instead of having to carefully control the media (the broths) first.

As Maximilian Fottner, Senior Scientist in Lang's group and a lead author of the study, said in a press note, the study makes it "possible to produce designer proteins containing unnatural amino acids just as efficiently as their natural counterparts". These could be genuinely multifunctional proteins, such as an antibody that carries a drug at one engineered position.

The team also showed that its approach could deliver two different artificial amino acids, allowing a single protein to carry two engineered features at different positions.

Dr. Lang and colleagues are working on designing a similar system in human cells to produce artificial human-like proteins that could be suited for several therapeutic applications. The idea could extend to import molecules other than amino acids to produce complex chemical compounds, she added.

(Joel P. Joseph is a freelance science journalist and researcher. joelpjoseph2009@gmail.com)



An illustration of a chain of amino acids. All proteins are made of some combination of the 20 natural amino acids. In the lab, chemists can also synthesise thousands of artificial amino acids, many of which have completely new properties. GETTY IMAGES/ISTOCKPHOTO

THE GIST

In the 1980s, Peter Schultz and his colleagues at the University of California, Berkeley, laid the foundations of incorporating artificial amino acids into proteins at specific sites

Over the years, scientists have expanded this toolkit to incorporate artificial amino acids in proteins that cells make

Yet one problem has persisted: the struggle to get enough artificial amino acids into the cell

The recent findings matter because in many standard lab broths, there are already lots of natural peptides floating around, and they all compete for the same transporter, reducing how much of the cargo is smuggled inside the cell

The Science Behind the Breakthrough

1. The Biological Constraint

Naturally, all life forms use a standard set of 20 amino acids to build proteins. While chemists can synthesize thousands of artificial amino acids with unique properties (e.g., the ability to bind to specific drugs), getting these into a living cell was nearly impossible because:

The Membrane Barrier: Artificial amino acids are often "water-loving" (hydrophilic), while the core of a cell membrane is "water-repelling" (hydrophobic).

Competition: Natural nutrients usually "crowd out" artificial ones at the cell's entry gates.

2. The "Trojan Horse" Strategy

The researchers used Directed Evolution to rewire the bacteria (E. coli):

Engineering the Transporter: They modified the ABC Transporter, a protein responsible for bringing food into the cell.

The Cargo: They attached the artificial amino acid to a short chain of natural amino acids (a tripeptide).

Inside the Cell: Once the transporter "smuggled" the chain inside, the cell's own enzymes (proteases) naturally snipped the chain, releasing the artificial amino acid for the Ribosome to use in protein synthesis.

Significance

1. Biotechnology and Health

Targeted Drug Delivery: Designer proteins can be engineered to carry toxic cancer drugs directly to a tumor, sparing healthy cells.

Multifunctional Proteins: Scientists can now create "bi-specific" proteins that perform two tasks at once—for example, an antibody that both identifies a virus and triggers an immune response at a specific spot.

Therapeutic Applications: This opens doors for creating human-like proteins in the lab to treat genetic disorders or chronic diseases.

2. Innovation and IP

Efficiency: The new method is 10x more efficient than previous attempts and works in standard lab conditions, making mass production of complex biologics commercially viable.

Synthetic Biology Leadership: This highlights the shift from merely "reading" DNA to "writing" and "re-engineering" biological systems for human benefit.

Static Section: Proteins and Amino Acids

Concept	Explanation

Concept	Explanation
Amino Acids	The building blocks of proteins. They consist of an amino group, a carboxyl group, and a unique Side Chain (R group).
Ribosome	The "protein factory" of the cell where amino acids are assembled into chains based on genetic instructions (mRNA).
Directed Evolution	A method used in protein engineering that mimics natural selection to evolve proteins toward a user-defined goal (Nobel Prize in Chemistry, 2018).
ABC Transporters	(ATP-Binding Cassette) A large family of proteins that use energy (ATP) to move molecules across cell membranes.

Conclusion

The ability to incorporate non-natural building blocks into the machinery of life marks a transition into the era of Customized Bio-manufacturing. While the study focused on E. coli, the eventual application in human cells could revolutionize how we treat "undruggable" diseases. For India, which is a global leader in generic pharmaceuticals, investing in such Synthetic Biology platforms is crucial to transition toward high-value Biopharmaceuticals.

UPSC Prelims Exam Practice Question

Ques: With reference to Synthetic Biology, consider the following statements:

1. It involves redesigning organisms for useful purposes by engineering them to have new abilities.

2. It only focuses on sequencing and reading genetic material.

3. It allows scientists to create biological systems that do not exist in nature.

Which of the statements given above is/are correct?

A. 1 only

B. 1 and 3 only

C. 2 and 3 only

D. 1, 2 and 3

Ans: B)

UPSC Mains Exam Practice Question

Ques: What is Synthetic Biology? Discuss its potential applications in medicine and biotechnology. **(150 words)**

The Office of the Speaker in the Lok Sabha, modeled after the British House of Commons, represents the dignity, freedom, and liberty of the House. As the "Conscience Keeper" of the House, the Speaker is the bridge between the Treasury and Opposition benches. However, the recent no-confidence motion against the Speaker highlights a growing friction in Indian parliamentary democracy, bringing to the fore questions regarding the impartiality, accountability, and the "partisan" perception of this high constitutional office.

Reevaluating the office of the Speaker

Ahmed Raza

Assistant Professor, Department of Public Administration, MANUU

The recent no-confidence motion moved by the Opposition against Om Birla has reignited the debate over the constitutional position and accountability of the office of the Speaker of the Lok Sabha. While such motions are rare, their significance lies not merely in the possibility of removal but in what they reveal about the functioning of parliamentary institutions and the evolving conventions surrounding the Speaker's office.

The office of the Speaker is one of the most critical pillars of India's parliamentary democracy. As the presiding officer of the Lok Sabha, the Speaker ensures orderly debate, enforces the rules of procedure, safeguards the rights of members, and maintains the balance between government authority and the voice of the Opposition. The Constitution establishes the Speaker as an impartial arbiter expected to rise above party politics once elected. Convention demands that the office be exercised with neutrality and fairness. The Speaker's authority extends to several crucial functions such as the recognition of members, interpretation of procedural rules, disciplinary powers, and the certification of Money Bills. These powers significantly shape legislative outcomes and parliamentary debates, and because of this influence, the constitutional framework provides strong protections to ensure that the Speaker cannot be removed easily for political reasons.

The process for removal

The procedure for the removal of the Speaker is deliberately stringent. According to Article 94(c) under the Constitution, the Speaker can be removed only through a resolution passed by a majority of all the members of the Lok Sabha, not merely those present and voting. This high threshold reflects the intent to safeguard the stability and dignity of the office. The process begins when a member submits a written notice to the Secretary-General of the Lok Sabha seeking removal. At least 14 days' notice must be given before the motion can be taken up. Once admitted, the motion requires the support of at least 50 members to proceed for discussion in the House. The procedural framework governing this process is laid down in the Rules of Procedure and Conduct of Business in Lok Sabha, specifically Rules 200 to 203. The rules mandate that the resolution must clearly state the charges against the Speaker. During the debate on such a motion, the Speaker may participate in the proceedings as a member of the House, and while the Speaker can vote on the resolution in the first instance, he/she cannot exercise their vote in case of a tie.

No-confidence motions against the Speaker have been extremely rare in India's parliamentary history

No-confidence motions against the Speaker have been extremely rare in India's parliamentary history. Only three such attempts have occurred – in 1954, against G. V. Mavalankar; in 1966, against Hukam Singh; and in 1987, against Balram Jakhar. In all three cases, the motions failed. These precedents demonstrate the political and procedural difficulty involved in removing a Speaker.

Larger impact

Although the present motion may not result in the Speaker's removal, it carries broader institutional significance. It reminds presiding officers that their authority derives from the collective confidence of the legislature. The Speaker's credibility depends heavily on the perception of impartiality. Allegations of partisan conduct can weaken public confidence in parliamentary processes.

While the high constitutional threshold ensures that the Speaker is not vulnerable to routine political pressure, it still allows a democratic mechanism for accountability.

However, several challenges affect the functioning of the Speaker's office. First, there is a growing perception of politicisation. In recent years, decisions on matters such as disqualification of legislators under the anti-defection law or certification of Money Bills have often been viewed through a partisan lens. Second, frequent confrontations between the ruling party and the Opposition have led to procedural deadlocks in Parliament. When the neutrality of the presiding officer is questioned, trust between political actors erodes, making consensus-building more difficult. Third, parliamentary conventions – unwritten norms that once guided the impartial conduct of the Speaker – have gradually weakened. As political competition intensifies, these conventions risk being overshadowed by tactical considerations.

The way ahead

To preserve the credibility of Parliament and strengthen democratic governance, reforms and renewed commitment to parliamentary norms are necessary. Reinforcing institutional conventions should be the first step. Political parties must collectively reaffirm the tradition that the Speaker acts above party lines once elected. Enhancing transparency in procedural rulings can also improve trust. Clear explanations for major decisions – such as rejecting requests for discussion or certifying legislative bills – would reduce allegations of bias. Encouraging dialogue between the government and the Opposition is equally important. Structured consultations on parliamentary procedures and reforms could reduce confrontations and improve legislative productivity. Finally, codifying best practices regarding the Speaker's discretionary powers may help clarify ambiguities. While flexibility is essential in parliamentary procedure, clearer guidelines could reduce disputes over interpretation.

Key Highlights of the Analysis

Constitutional Mandate: The Speaker is not just a presiding officer but an arbiter of rules. Under Article 94(c), the removal process is deliberately stringent to ensure the office remains insulated from "routine political pressure."

The Power of Neutrality: The Speaker's credibility relies on being "seen" as impartial. The article notes that while historical motions (1954, 1966, 1987) failed, they serve as a democratic check on the Speaker's authority.

The "Partisan" Challenge: Modern challenges include the controversial use of discretionary powers in:

Anti-Defection Law (10th Schedule): Acting as a quasi-judicial authority.

Money Bill Certification (Article 110): Decisions that bypass the Rajya Sabha.

Disciplinary Actions: Suspensions and recognizing members.

The Path Forward: The author suggests codifying best practices, enhancing transparency in rulings, and reviving the convention where the Speaker "rises above party lines" upon election.

Static Section: Office of the Speaker

1. Election and Tenure

Election: The Speaker is elected by the Lok Sabha from among its members. The date of the election is fixed by the President.

Tenure: Usually co-terminus with the Lok Sabha. However, they continue in office even after the dissolution of the House until immediately before the first meeting of the new House.

2. Removal Procedure (Article 94)

Step	Detail
Notice	Minimum 14 days advance notice.
Support	Must be supported by at least 50 members for admission.
Voting	Must be passed by an Effective Majority (Majority of all the then members of the House).
Rights during Trial	The Speaker can speak and participate but cannot preside. They have the right to vote in the first instance but not in case of a tie.

3. Powers and Functions

Presiding Officer: Maintains order and decorum. Their decision in all parliamentary matters is final.

Quorum: Adjourns or suspends the House in the absence of a quorum (1/10th of total strength).

Casting Vote: Does not vote in the first instance; exercises a Casting Vote only to resolve a tie (Article 100).

Joint Sitting: Presides over the joint sitting of both Houses (Article 108).

10th Schedule: Decides on disqualification of members on grounds of defection (subject to Judicial Review as per Kihoto Hollohan case, 1992).

Critical Concerns for Mains

The British vs. Indian Convention: In Britain, the Speaker resigns from their party to ensure neutrality ("Once a Speaker, always a Speaker"). In India, the Speaker does not resign from the party, leading to allegations of bias.

Judicial Oversight: While the Speaker's proceedings are generally immune from court interference (Article 122), recent Supreme Court judgments (e.g., Nabam Rebia case) have restricted the Speaker's powers, especially when a notice for their own removal is pending.

Conclusion

The Speaker is the linchpin of the legislative process. As the article rightly suggests, the strength of the office lies not in the "legal protection" it enjoys, but in the "moral authority" it commands. For India's parliamentary democracy to remain robust, the Speaker must transition from being a "nominee of the ruling party" to a "trustee of the House." This requires a blend of constitutional reforms and the revival of healthy parliamentary conventions.

UPSC Prelims Exam Practice Question

Ques: Which of the following statements regarding the Anti-Defection Law (10th Schedule) is correct?

A. Disqualification decisions are taken by the Election Commission.

B. Disqualification decisions are taken by the Speaker or Chairman of the House.

C. Defection cases are decided by the Supreme Court directly.

D. Defection is dealt with under the Representation of the People Act.

Ans: B)

UPSC Mains Exam Practice Question

Ques: The Speaker of the Lok Sabha is expected to act as an impartial authority in parliamentary proceedings. Discuss the constitutional provisions and conventions that aim to ensure the neutrality of the Speaker. **(250 Words)**

Page : 10 : GS III : Indian Economy / Prelims Exam

The 16th Finance Commission (FC-16) award period (2026–31) marks a pivotal moment in India's fiscal history. While the headline figure of 41% vertical devolution suggests continuity and stability, a deeper analysis reveals a "quiet re-engineering" of fiscal relations. By shifting the horizontal formula to reward economic weight over fiscal effort, and ignoring the shrinking base of the divisible pool, the new framework risks widening regional disparities and deepening the Centre-State asymmetry.

'41%' illusion: a quiet re-engineering of India's fiscal federal landscape

16th Finance Commission retained States' share in the divisible pool at 41% even as the divisible pool as a proportion of gross tax revenues has shrunk; various grants have been discontinued; the gap between a State's entitlement and its actual receipt depends on its capacity to meet Central monitoring requirements

ECONOMIC NOTES

Deepanshu Mohan

An Explanatory Memorandum issued by the Ministry of Finance on February 1, 2026, is seen as a useful document, not only for what it states or approves but also for observing a pattern of what it does not.

The Union government accepted the Sixteenth Finance Commission's (FC's) recommendation to retain the States' share in the divisible pool at 41%. It also accepted the horizontal formula, the local body grants, and the disaster management corpus. However, it deferred everything structural, such as amending the Fiscal Responsibility Legislation, controlling off-budget borrowings, reforming power sector distribution companies, and rationalising subsidies.

This observed asymmetry is not bureaucratic caution. It became the settlement.

The headline number deserves scrutiny before the settlement does. A 41% share sounds like continuity. In nominal terms, it is. But the divisible pool is not gross tax revenues.

Cesses and surcharges, levied and retained entirely by the Union, sit outside the pool, and their share has been growing.

As the FC16 report documents, the divisible pool as a proportion of gross tax revenues averaged 89.2% during the FC13 period, fell to 82.1% during FC14, and dropped further to 78.3% during FC15.

The Commission acknowledges this trend, notes its undesirability, and declines to fix it. Hence, 41% of a shrinking base is not 41% of total collections.

FC16 has also discontinued revenue deficit grants, sector-specific grants, and State-specific grants, instruments that offered targeted fiscal relief to States. The Commission projects that combined general government debt will fall from 77.3% of GDP in 2026-27 to 73.1% by 2030-31.

The aggregate trajectory looks orderly. It is the disaggregated picture where the real argument begins.

Structural deferrals

FC16 was aware of the fault lines it chose not to repair. Its chapters on State finances, power sector losses, and subsidies name them directly. The Commission identified States with structurally unsustainable fiscal trajectories. It called for reforms. It attached no binding enforcement mechanism to achieve them.

The most consequential gap is the residual asymmetry left by the end of GST compensation in June 2022. States lost a guaranteed 14% annual growth in SGST revenues without a structural replacement.

Tamil Nadu alone estimated a shortfall of nearly ₹20,000 crore in 2024-25. The Commission reads aggregate SGST buoyancy as evidence of recovery. The distributional stress has not followed.

The second deferral concerns off-budget borrowings and fiscal rules. FC16 documented how States borrow through government-controlled entities and service those liabilities from the budget, keeping them invisible in headline deficit figures.

It is recommended that States discontinue this practice and that the Fiscal Responsibility Legislation (FRL) frameworks be amended.

The Explanatory Memorandum accepted the quantum of borrowing ceilings in principle, then noted that off-budget controls, FRL amendments, and the Union's own fiscal deficit path would be examined separately. That phrase has a history in Indian fiscal federalism. It means not now.

The Commission's own inter-State comparison documents the backdrop. Punjab carried a debt-to-GSDP ratio of 42.9% in 2023-24 and a revenue deficit of 3.7% of GSDP, borrowing primarily to address revenue shortfalls rather than build capital assets.

Rajasthan's outstanding liabilities stood at 37.9% of GSDP, West Bengal's at 38.3%, and Andhra Pradesh's at 34.6%. Each operates under fiscal rules that, by the Commission's own assessment, are effectively unenforced. The recommendation to reform those rules was made. The Union noted it for later.

Rewarding the Centre's priorities

Two choices in FC16's transfer architecture repay close reading.

The first is the replacement of the tax and fiscal effort criterion in the horizontal devolution formula with a contribution to GDP criterion. Under FC15, States received a 2.5% weight based on their own tax revenue efficiency relative to economic capacity, rewarded for trying harder.

The new criterion, assigned a 10% weight, allocates resources in proportion to each State's contribution to national GDP, measured as the square root of its GSDP relative to all States. Maharashtra, Gujarat, and Karnataka, large, high-GSDP States that already generate substantial own revenue, benefit structurally from this shift.

Bihar, Jharkhand, and Uttar Pradesh, which are States with lower per capita incomes and greater fiscal need, do not. This is not a technical adjustment. It is an inversion of equalisation logic: the previous criterion rewarded effort, the new one rewards weight.

The shift from tax & fiscal effort (2.5%) to contribution to GDP (10%) is the defining structural change. The second is the conditionality architecture of the local body grants. The ₹7,91,493 crore recommended for rural and urban local bodies is divided into basic and performance components, with access contingent on entry-level conditions covering constituted bodies, audited accounts, and the timely constitution of State Finance Commissions.

Performance grants add further layers tied to own-source revenue benchmarks and Central database compliance. Each condition is defensible in isolation. Together, they construct a system in which the gap between a State's entitlement and its actual receipt depends on its capacity to meet Central monitoring requirements.

States with weaker governance infrastructure, which tend also to be States with greater fiscal need, face that gap most acutely. The FC15 period offers a precedent, where urban local body grants were released at only 62.6% of the recommended amount.

Read alongside the Commission's report, the Explanatory Memorandum reveals a consistent logic. The Union accepts what gives it budgetary predictability: the 41% share, the formula, and the grants.

It defers what would require sharing structural authority, fiscal rule reform, off-budget liability controls, and power sector restructuring. Where FC16 diagnosed a problem and recommended a remedy, the Union took note. Where FC16 designed a flow and set an amount, the Union accepted it in full.

What makes the FC16 moment distinctive is that it arrives after years of documented State-level fiscal deterioration, the Commission's own data confirms.

Punjab borrows to pay salaries and service existing debt, not to build infrastructure. Andhra Pradesh carries reorganisation-era liabilities that no Finance Commission has resolved. Rajasthan's revenue deficit persists across multiple award periods. The Commission saw each of these. The Memorandum took note.

A federal structure whose transfers increasingly reward economic weight over fiscal need, whose structural stress is deferred cycle after cycle, and whose only reliable outcome is the perpetuation of Centre-State asymmetry is surely not a system in good health. It has somehow learned to look like it is - and that is deeply troubling and unsettling for the fiscal-federal character of India's constitutional republic which can result in long-term implications and an exacerbating civic divide.

Deepanshu Mohan is professor and dean, O.P. Jindal Global University, and Director, Centre for New Economics Studies (CNES). Nagappan Arun and Saksham Raj contributed to this column from Centre for New Economics Studies, O.P. Jindal Global University.

Drop in shareable revenue

Divisible Pool as % of Gross Tax Revenue (GTR), from 2010-11 to 2025-26

Year	FC period	Divisible pool (% of GTR)	States' share in the divisible pool
2010-11	FC13	89	32%
2011-12	FC13	88.9	32%
2012-13	FC13	89.7	32%
2013-14	FC13	89.3	32%
2014-15	FC13	89.1	32%
2015-16	FC14	86.9	42%
2016-17	FC14	86.2	42%
2017-18	FC14	75.6	42%
2018-19	FC14	81.2	42%
2019-20	FC14	80.9	42%
2020-21	FC15	74	41%
2021-22	FC15	75.3	41%
2022-23	FC15	77.5	41%
2023-24	FC15	79.9	41%
2024-25 RE	FC15	81.9	41%
2025-26 BE	**FC15**	**81.3**	**41%**

Source: CAG certificates from 2010-11 to 2023-24, Union Budgets for remaining years through Figure 7.4 of 16FC Volume I - Main Report

Horizontal devolution formula of FC15 vs FC16

Criterion	FC15 weight (2021-2026)	FC16 weight (2026-2031)	Change (*pp)
Income distance (per capita GSDP)	45%	42.50%	-2.5
Population (2011 Census)	15%	17.50%	+2.5
Demographic performance	12.50%	10%	-2.5
Area	15%	10%	-5
Forest cover	10%	10%	--
Tax & fiscal effort	2.50%	Dropped	-2.5
Contribution to GDP	--	10% (New)	+10

*pp- percentage points

Source: Reports of the 15th and 16th Finance Commissions through PRS

The Union accepts what gives it budgetary predictability: the 41% share, the formula, and the grants. It defers what would require sharing structural authority, fiscal rule reform, off-budget liability controls, and power sector restructuring

THE GIST

- The Union government accepted the Sixteenth Finance Commission's (FC's) recommendation to retain the States' share in the divisible pool at 41%.
- A 41% share sounds like continuity. In nominal terms, it is. But the divisible pool is not gross tax revenues.
- Cesses and surcharges, levied and retained entirely by the Union, sit outside the pool, and their share has been growing.

Key Highlights of the Analysis

1. The "Shrinking Pool" Phenomenon

The 41% share is often called an "illusion" because it applies only to the Divisible Pool, not the Gross Tax Revenue (GTR).

Cess and Surcharges: These remain outside the pool. Their share in GTR has grown significantly, causing the divisible pool to shrink from 89.2% (FC-13) to a projected 78.3% (FC-15/16).

Effective Devolution: 41% of a smaller base means States are effectively receiving much less than the headline number suggests.

2. Shift in Horizontal Devolution (The 10% Weight)

The most controversial change is the replacement of "Tax and Fiscal Effort" with "Contribution to GDP".

Reward for Weight: Large, industrialized states like Maharashtra and Karnataka benefit.

Neglect of Need: Lower per-capita income states (UP, Bihar) lose out, inverting the traditional "Equalization Logic" of Finance Commissions.

3. Deferral of Structural Reforms

The Union government accepted the numbers but deferred (put off) structural issues:

Off-Budget Borrowings: States often hide debt in PSUs; the Centre noted the need for reform but hasn't enforced it.

GST Compensation Gap: Since the end of the GST compensation in 2022, states have faced a "structural hole" in revenues that FC-16 failed to address.

FRL Amendments: Reforms to the Fiscal Responsibility Legislation remain in limbo.

4. Conditional Grants and Governance Gaps

Grants for Local Bodies are now heavily tied to Central Monitoring Requirements.

Performance Trap: States with weak governance (which need money the most) may fail to meet "entry-level conditions," leading to lower actual receipts.

Static Section: Finance Commission

Feature	Details
Constitutional Basis	Article 280; constituted by the President every 5 years.
Vertical Devolution	Distribution of net tax proceeds between the Union and the States (currently 41%).

Feature	Details
Horizontal Devolution	Distribution of the states' share among individual states based on a formula (Income distance, Population, Area, etc.).
Divisible Pool	Comprises all taxes except those mentioned in Articles 268 & 269, and Cesses/Surcharges.
Local Body Grants	Under Article 280(3)(bb) and (c) to augment State Consolidated Funds for Panchayats/Municipalities.

Significance

1. Fiscal Federalism

Asymmetry: The analysis highlights a shift from "Cooperative Federalism" to a more "Centralized/Command" model where the Union dictates the terms of fiscal health.

Equity vs. Efficiency: The debate over whether to reward developed states (Efficiency) or support backward states (Equity) is a classic UPSC Mains theme.

2. Debt Sustainability

High Debt-to-GSDP ratios in states like Punjab (42.9%) and West Bengal (38.3%) pose a risk to national macroeconomic stability. FC-16's failure to provide a binding enforcement mechanism for these "unsustainable trajectories" is a major policy gap.

Conclusion

The FC-16 recommendations, as accepted by the government, prioritize budgetary predictability for the Centre while deferring the structural stress of the States. By rewarding economic weight over fiscal need, the new landscape risks creating a "civic divide." For a robust "Viksit Bharat," fiscal federalism must ensure that no state is left behind due to governance gaps or shrinking pools.

UPSC Mains Exam Practice Question

Ques: Explain the concept of Fiscal Federalism. How does the Finance Commission help in maintaining fiscal balance between the Union and the States? (**150 words)**

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AI and the national security calculus

Bharath Reddy
is an Associate Fellow with the Takshashila Institution

Anthropic, an American Artificial Intelligence (AI) lab, is asking for three Chinese AI labs (DeepSeek, MoonshotAI, and MiniMax) to be treated as national security threats. The AI models of Anthropic and other American labs have also reportedly been used by the U.S. military in the Iran attacks to fast-track the "kill chain" from target identification to legal approval and strike.

The Pentagon has labelled Anthropic a "supply chain" risk – a designation associated with foreign adversaries, for raising concerns about how its technology is being used in military operations. This decision is now being challenged in court. These developments over the course of a few weeks have serious implications for AI development and national security calculus worldwide.

The issue

The Chinese AI labs have been accused of distilling frontier models from American AI companies. In a nutshell, this involves taking a stronger AI model's outputs to teach a weaker model. The attacks were sophisticated and used deceptive techniques to mask the identity and intent of the distillers. Anthropic claims that this happened on an industrial scale – "16 million exchanges with Claude through approximately 24,000 fraudulent accounts, in violation of our terms of service and regional access restrictions".

Generative AI is often equated with nuclear technologies, with the aim of containing the proliferation of the technology. However, it is a dual-use general-purpose technology that is more comparable to semiconductors than nuclear weapons. Unlike nuclear technologies, where governments drive research and development efforts, cutting-edge AI research happens in the private sector for civilian applications. It just so happens that the same technology also has military applications.

Nuclear non-proliferation works because fissile material is rare, controlled and traceable. The same is not true for mathematical AI models. The fact that DeepSeek was able to achieve comparable performance of frontier models at a fraction of the cost after export controls were imposed is proof that restrictions are not effective. The nuclear narrative asks us to treat querying an AI model as equivalent to weapons proliferation.

The controversy over AI integration in military systems highlights the need for plurilateral commitments by states to responsible use

Distilled models and guardrails

Anthropic's argument that a distilled model will be used less responsibly lies on weak foundations. Models from frontier American AI labs such as Anthropic, OpenAI, Google and xAI could be used by the U.S. military for applications such as surveillance, cyberwarfare and lethal autonomous weapons systems. In fact, when Anthropic recently raised concerns about the kinds of uses its models were put to, it faced the threat of being removed from defence systems and designated as "supply chain risks". Its rival, OpenAI, however, has accepted a permissive contract for military uses, highlighting a race to the bottom, given the competitive pressure to serve government clients. When their own models are being put to such uses, the argument that distilled models will not have guardrails collapses.

It is extremely hard to control the diffusion of such a technology for many reasons. Talent mobility is hard to restrict. Many of the researchers at Chinese labs were trained in U.S. universities or worked in U.S. companies. The restrictions on inputs such as semiconductors have been repeatedly circumvented and are now partially repealed. Now, distillation is one more vector that is even harder to restrict, as the Anthropic report acknowledges. Each time a restriction appears, workarounds find a way to bypass it. If distillation is seen as extremely risky, not allowing public access to it should be an option to consider.

In the language of national security, these restrictions do not make the world safer. They make it harder for rivals to compete with dominant U.S. companies even on civilian applications. Input-based restrictions are ineffective and only cause collateral damage to innovation, scientific collaboration and widespread economic development. They effectively consolidate power in the hands of a few U.S. companies.

Equating distillation to industrial-scale intellectual property theft also seems unfair, given that frontier AI models are trained on the creative and intellectual output of millions of people who were not compensated and did not consent. The process of asking a model millions of questions and learning from its answers is arguably no more extractive than training that model on billions of web pages written by people who never consented to it.

The companies whose models were distilled are right to claim that their terms of service have been violated by those distilling their models and can pursue measures to block such actors. However, they are also arguing for a coordinated response across the AI industry, cloud providers, and policymakers. This move further entrenches the market power of a handful of companies.

What is needed

As scary as it is, it seems inevitable that armed forces worldwide will integrate generative AI into military systems. The Anthropic episode demonstrates that corporate guardrails are not a substitute for governance: a company can be overridden, replaced, or pressured into compliance. What is needed instead are plurilateral commitments by states to responsible use, covering meaningful human control over lethal decisions, prohibitions on mass civilian surveillance, and auditable technical standards for such capabilities. These commitments must apply universally for them to be effective.

GS Paper III : Internal Security

UPSC Mains Practice Question: Artificial Intelligence is increasingly being integrated into modern warfare systems. Discuss the implications of AI-driven military technologies for global security. **(150 Words)**

Context :

The intersection of Generative AI and National Security has moved beyond theoretical risks to active military and industrial conflict. Recent reports highlight two major trends: the use of frontier AI models by the U.S. military to accelerate the "kill chain" in combat operations, and the alleged "industrial-scale distillation" of American AI models by Chinese firms. These developments challenge existing export controls and raise questions about whether AI should be treated as a Nuclear-like technology (highly restricted) or a General Purpose Technology (like semiconductors).

Core Issues: Distillation and Proliferation

1. AI Model Distillation

The Process: Distillation involves using the outputs of a highly advanced "teacher" model (e.g., Claude) to train a smaller, cheaper "student" model.

The Conflict: Anthropic alleges that Chinese labs used 24,000 fraudulent accounts to perform 16 million exchanges to "steal" their model's reasoning capabilities.

The Implications: It proves that Export Controls on hardware (chips) are insufficient. If a rival can "distill" a model through a public API, the technological gap between nations closes rapidly.

2. The "Nuclear" vs. "Semiconductor" Narrative

Nuclear Narrative: Argues for strict non-proliferation because AI is an existential threat.

Semiconductor Narrative: Argues that AI is a dual-use, general-purpose tool. Unlike nuclear material (which is rare), AI code and talent are highly mobile and nearly impossible to "contain."

Significance

1. Internal Security & Defense

The "Kill Chain" Acceleration: AI is being used to fast-track target identification and legal approval. This raises ethical concerns about Meaningful Human Control over lethal decisions.

Supply Chain Risk: The Pentagon's label of Anthropic as a "supply chain risk" suggests that even domestic tech companies can be viewed through a security lens if they resist military integration.

2. International Relations

Technological Sovereignty: The conflict illustrates a "race to the bottom" where companies like OpenAI may accept permissive military contracts to stay relevant, while others face legal/regulatory pressure.

Digital Colonization: The author argues that U.S. restrictions may not make the world safer but rather consolidate power in the hands of a few American companies, hindering global civilian innovation.

Static Section: AI and Security Frameworks

Concept	Explanation
Dual-Use Technology	Goods/software that can be used for both civilian and military purposes (e.g., GPS, AI, Drones).

Concept	Explanation
The Kill Chain	The military process of: Find -> Fix -> Track -> Target -> Engage -> Assess. AI significantly reduces the time between these steps.
Frontier Models	High-capacity AI models that can perform a wide variety of tasks and outmatch most existing systems (e.g., GPT-4, Claude 3).
Bioluminescence	(Relevant for Firefly News): Chemical light production; in AI, "Bioluminescence" is sometimes used metaphorically for transparent algorithms.

Key Challenges and The Way Ahead

Challenges

Ineffectiveness of Controls: As seen with DeepSeek, Chinese labs achieved high performance despite U.S. chip sanctions.

Ethical Guardrails: If AI is used for surveillance or autonomous weapons, "corporate guardrails" are often the first to be bypassed by national security mandates.

The Way Forward

Plurilateral Commitments: Nations need to agree on universal standards for AI in warfare, focusing on Auditable Technical Standards.

Human-in-the-Loop: Ensuring that lethal decisions are never fully delegated to an algorithm.

Intellectual Property (IP) Evolution: Moving beyond "terms of service" to international treaties that define the limits of AI training and distillation.

Conclusion

The Anthropic-DeepSeek episode demonstrates that the "National Security Calculus" of the 21st century is no longer just about missiles and borders—it is about data, compute, and algorithms. For India, the lesson is clear: relying on foreign AI "black boxes" carries significant supply-chain and security risks. Developing Sovereign AI and participating in global AI governance forums is essential to protect national interests.