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India's Narrowing Trade Deficit: A Glimpse into May 2025 Trade Trends

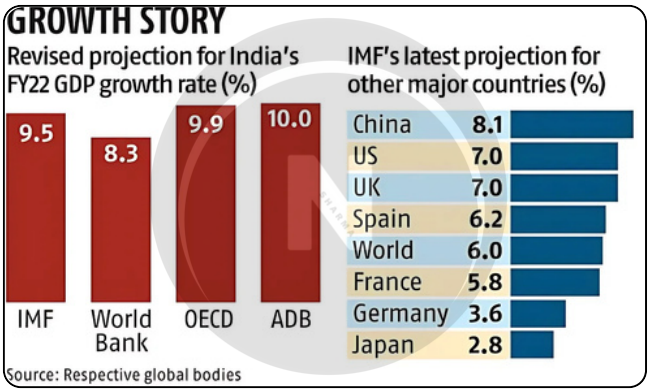
Why in the News?

In May 2025, India's overall trade deficit narrowed significantly to $6.6 billion, down nearly 30% from the same month last year, driven by a fall in imports, particularly petroleum, and growth in total exports, particularly from the services sector.

- According to data from the Ministry of Commerce and Industry, total exports rose 2.8% year-on-year, reaching $71.1 billion, with the services sector leading the charge with a robust 9.4% growth.
- In contrast, merchandise exports fell by 2.2%, largely due to the decline in petroleum prices.
- The positive trade figures suggest resilience in India's external sector despite geopolitical uncertainties, volatile energy markets, and uneven global demand.
- However, the contrasting trends in services and merchandise trade highlight persistent structural issues within India's export basket and point toward broader questions on how India can achieve sustainable trade competitiveness in the long run.

Background

India's trade performance has always been a critical barometer of its macroeconomic health, currency stability, and external sector resilience. Over the past decade, India has consistently run a current account deficit (CAD), driven largely by merchandise trade imbalances, though these have been partially offset by strong services exports and remittances.



Evolution of India's Trade Deficit

- **Pre-COVID Trends (2015–2019):** India's merchandise trade deficit fluctuated between $120–150 billion annually, with crude oil imports constituting the bulk of the deficit. Services exports, particularly in IT and ITeS, helped contain the current account gap.
- **COVID Disruption (2020–2021):** Both exports and imports contracted sharply. However, the services sector showed relative resilience, and the fall in oil prices helped compress the trade deficit temporarily.
- **Post-Pandemic Recovery (2022 - 2024)**: A global economic rebound and rising oil prices widened India's trade deficit in 2022 and 2023. The Russia-Ukraine war, China's supply chain disruption, and rising interest rates in developed economies further impacted trade dynamics.
- **Recent Context (2024 - 2025):** India's merchandise export performance has been mixed, largely due to subdued global demand, shifting trade preferences, and rising protectionism. However, service exports have shown sustained strength due to global digitalisation and India's competitiveness in tech-based services.

Features of the May 2025 Trade Data

The May 2025 trade figures reveal contrasting trends across sectors, underscoring the growing bifurcation between merchandise and services performance:

Growth in Total Exports

- Total exports stood at $71.1 billion, registering a 2.8% increase over May 2024.
- Of this, services exports rose by 9.4% to $32.4 billion, highlighting India's global competitiveness in IT, financial services, consulting, and digital platforms.
- Merchandise exports declined by 2.2%, falling to $38.7 billion, owing largely to the fall in oil-related exports.

Performance of Non-Petroleum Exports

- Non-petroleum exports showed resilience, growing 5.1%, which suggests that sectors like pharmaceuticals, engineering goods, and chemicals remain strong despite global headwinds.

Fall in Imports Due to Decline in Oil Prices

- Total merchandise imports contracted by 1.7%, with petroleum imports falling significantly.
- However, non-petroleum imports increased by 10%, indicating a revival in domestic industrial and consumer demand.
- Services imports rose marginally by 1.5%, contributing to the overall moderation in total imports.

Overall Trade Deficit Narrows

- India's total trade deficit fell to $6.6 billion, a sharp decline from $9.5 billion in May 2024.
- The decline in oil prices has been instrumental in compressing the import bill, while strong services exports have helped maintain positive net earnings.

Challenges

Despite the optimistic headline figures, several structural and cyclical challenges persist in India's trade landscape:
Volatility in Merchandise Exports

- The 2.2% contraction in merchandise exports reflects India's vulnerability to external shocks.
- High reliance on petroleum products and low value-added manufacturing weakens export resilience.
- Global slowdown, particularly in the US, EU, and China, continues to affect demand for Indian goods.

Petroleum Dependency and Global Price Volatility

- India's trade balance remains highly sensitive to oil price fluctuations.
- The fall in petroleum exports due to falling prices not only affects export revenue but also exposes India to geopolitical risks in West Asia and Russia.

Stagnation in Labour-Intensive Exports

- Sectors like textiles, leather, and handicrafts have seen stagnating or declining growth, impacted by global competition and rising input costs.
- Free Trade Agreements (FTAs) signed by competing nations with key markets (like Bangladesh's access to the EU under GSP) are eroding India's price advantage.

High Non-Oil Imports Reflecting Low Domestic Substitution

- The 10% growth in non-petroleum imports suggests that India still lacks adequate domestic capacity in sectors like electronics, semiconductors, and industrial machinery.
- This raises concerns about the effectiveness of the "Make in India" and PLI (Production Linked Incentive) schemes in substituting high-value imports.

Services Growth Concentrated in IT/ITES

- While services exports have grown, they remain concentrated in a few sub-sectors, especially IT.
- India has yet to fully exploit services in legal process outsourcing, design, animation, fintech, health tech, education tech, etc.
- Dependence on a limited number of developed markets also creates geopolitical exposure.

Global Trade Headwinds

- Global protectionism, the WTO impasse, and rising trade barriers (especially carbon tariffs, such as the EU's CBAM) could limit India's export growth.
- Emerging technologies, such as AI and automation, may further reduce outsourcing demand in the long run.

Way Forward

To build a sustainable trade surplus and economic resilience, India must take a multi-pronged approach that balances short-term tactical gains with long-term structural reforms. Diversify Export Basket and Markets.

- Promote high-value-added sectors like semiconductors, electronics, aerospace components, medical devices, and clean energy equipment.
- Encourage green and digital services exports through regulatory support and global partnerships.
- Expand into emerging markets in Africa, Latin America, Central Asia, and Southeast Asia to reduce overdependence on Western economies.

Boost Domestic Manufacturing and Import Substitution

- Enhance the effectiveness of PLI schemes with a focus on MSMEs and ecosystem development (e.g., logistics, skilled labour, power supply).
- Facilitate technology transfer through FDI and domestic R&D investments.
- Promote cluster-based development for sectors like textiles, chemicals, auto components, and food processing.

Improve Trade Infrastructure and Logistics

- Strengthen port connectivity, digitise customs, and streamline procedures through the National Logistics Policy and PM Gati Shakti.
- Expand Integrated Check Posts (ICPs) and dry ports, especially along the eastern borders, to facilitate trade with ASEAN, Bangladesh, and BIMSTEC.

Negotiate Smart FTAs

- Push for mutually beneficial FTAs with the UK, EU, EFTA, and Canada that address tariff and non-tariff barriers.
- Ensure domestic preparedness before finalising trade agreements, particularly in sensitive sectors like dairy, agriculture, and automobiles.
- Use FTAs to integrate Indian firms into global value chains (GVCs).

Strengthen Trade Finance and MSME Support

- Provide low-cost trade finance, insurance, and market intelligence to small exporters via EXIM Bank, ECGC, and SIDBI.
- Promote e-commerce exports, including through ONDC and digital platforms for handicrafts, wellness products, and services.

Enhance Services Export Strategy

- Create a National Services Export Promotion Board to coordinate inter-ministerial efforts.
- Facilitate cross-border data flows, mutual recognition of professional qualifications, and easing of visa norms with key markets.
- Promote new service sectors like online education, remote healthcare, climate advisory, and sustainability consulting.

Leverage Global Developments Smartly

- Utilise falling oil prices as an opportunity to reduce the trade deficit and build forex reserves.
- Monitor developments in AI, climate action, and geopolitics to align trade policies with global shifts.

Conclusion

The narrowing of India's trade deficit to $6.6 billion in May 2025 is a welcome development amid global uncertainties. It reflects the growing maturity of India's services sector and the benefits of commodity price movements. However, the decline in merchandise exports, continuing dependence on petroleum imports, and lack of diversity in services exports underscore persistent structural challenges.

India's long-term trade resilience will depend not just on global commodity cycles but on policy coherence, infrastructure investment, and a strategic vision to make India a competitive hub for both goods and services in the global economy. Only then can the country turn trade into a sustainable engine of inclusive and robust economic growth.

Main Question

Critically examine the factors behind the narrowing of India's trade deficit in May 2025 and assess the structural challenges in achieving a sustainable trade balance.

Q. About India's trade performance in May 2025, consider the following statements:

1. The growth in India's total exports was entirely driven by a surge in petroleum-based merchandise exports.
2. Non-petroleum merchandise exports registered positive growth, while total merchandise exports contracted.
3. The decline in petroleum import prices led to a contraction in total merchandise imports, despite growth in non-petroleum imports.
4. India's services trade surplus was primarily responsible for the narrowing of the total trade deficit.

Which of the above statements are correct?

A. 1 and 4 only
B. 2, 3 and 4 only
C. 2 and 3 only
D. 1, 2 and 4 only

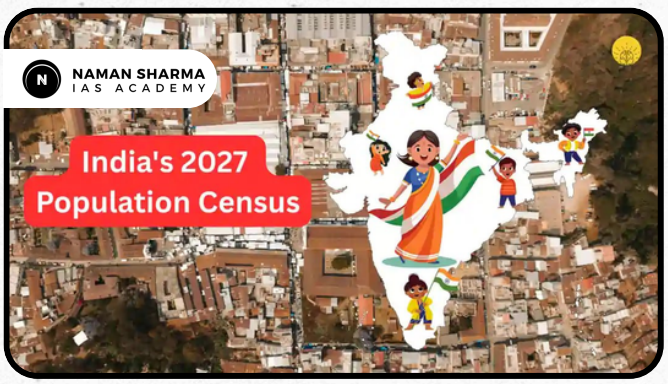
Correct Answer: B. 2, 3 and 4 only

Explanation:

- **Statement 1 is incorrect**: Petroleum-based merchandise exports declined due to falling oil prices.

- **Statement 2 is correct**: Non-petroleum exports grew 5.1%, while total merchandise exports fell by 2.2%.
- **Statement 3 is correct:** Total imports contracted 1% due to falling oil prices, even as non-oil imports rose.
- **Statement 4 is correct:** Services exports grew significantly (9.4%), helping offset the merchandise trade deficit.

From Paper to Portal: Reimagining India's Census for the 21st Century



Why in the News?

On June 16, 2025, the **Registrar-General of India (RGI)** issued a notification initiating the next decennial Census, scheduled for 2027.

- This official announcement marks a historic shift, as the Census will be conducted through digital platforms for the first time.
- The notification also freezes administrative boundaries until the exercise is completed, preventing states from altering district or tehsil limits.
- The reference date is fixed as March 1, 2027, except for Ladakh and snow-bound areas, where it is October 1, 2026.
- Union Home Minister Amit Shah chaired a high-level meeting to review preparations. The Ministry of Home Affairs emphasised the digital transformation of the Census, citing data security, self-enumeration provisions, and a workforce of over 34 lakh enumerators and supervisors.
- This marks the end of a long hiatus after the Census 2021 was delayed due to the COVID-19 pandemic, making this the longest gap between two Indian censuses in post-independence history.

Background

The Indian Census is a decadal exercise initiated in 1872 and formalised post-independence through the Census Act of 1948. The last Census took place in 2011.

- The 2021 Census was scheduled to be India's first digital Census and was expected to integrate with the National Population Register (NPR). However, the outbreak of the COVID-19 pandemic delayed both exercises.
- The Census counts every person residing in India, regardless of citizenship, whereas the NPR, linked to the Citizenship Act of 1955, is a list of "usual residents".
- The NPR data is meant to feed into the National Register of Citizens (NRC), raising concerns about citizenship verification and exclusion.
- Due to political sensitivities and civil protests, especially in 2020, the NPR update has not been officially linked with the 2027 Census.

Features of Census 2027

- **Digital Enumeration:** The Census will leverage mobile applications for real-time data collection. A self-enumeration portal will be provided to allow citizens to fill out their data online. This is expected to streamline data gathering, reduce manual errors, and increase efficiency.

Two-Phase Operation:

- **Phase I:** House Listing and Housing Census: Records physical infrastructure and household assets.
- **Phase II:** Population Enumeration: Captures demographic, economic, and social data.

- **Freezing of Administrative Boundaries:** No changes can be made to district, tehsil, or police station boundaries until the completion of the Census. This ensures uniformity in enumeration blocks and facilitates comparability.
- **Massive Human Resource Deployment:** Around 34 lakh enumerators and supervisors will conduct the fieldwork, supported by 1.3 lakh Census officials and coordinators.

Reference Dates:

March 1, 2027: Rest of India

- October 1, 2026: Ladakh, J&K, Himachal Pradesh, Uttarakhand
- Data Security Measures: Data encryption, role-based access controls, and secure transmission protocols are being instituted to protect collected information.

Challenges

Delayed Census and Data Obsolescence: The 16-year gap between Censuses (2011-2027) leaves policymakers with outdated demographic data. This affects:
Planning and execution of welfare schemes

Delimitation of constituencies
Urban and rural infrastructure development
Resource allocation under various centrally sponsored schemes

Digital Divide

- Digital enumeration presumes internet access and smartphone literacy, which remain uneven across India.
- Vulnerable groups, especially in rural and tribal areas, may be underrepresented or incorrectly enumerated.

Technological Preparedness:

- The efficacy of mobile applications and software remains untested on a national scale.
- Potential issues include app crashes, syncing delays, and hardware limitations.

Privacy and Surveillance Concerns:

- In the absence of a data protection law, citizens remain apprehensive about the misuse of personal information.
- Fears persist that data could be repurposed for surveillance or citizenship verification.

Ambiguity Around NPR:

- The lack of clarity about whether NPR will accompany the Census increases public scepticism.
- States like Kerala and West Bengal have previously resisted NPR due to its perceived link with the NRC.

Internal Migration and Urban Complexity:

- Post-pandemic internal migration patterns and urban slum proliferation present enumeration challenges.
- The Census needs to account for a transient population, many of whom lack permanent addresses.

Budget and Logistical Strain:

- A massive financial outlay is required for tech deployment, training, and field operations.

- Training over 34 lakh enumerators in digital tools is a monumental challenge.
- Political Consensus:
- Past NPR-related controversies may lead to opposition-led states resisting cooperation.
- Political mistrust can affect the completeness and accuracy of the Census.

Way Forward

Build Public Trust:

- Differentiate Census from NPR activities.
- Ensure transparency in data usage and publication of privacy protocols.

Bridge the Digital Divide:

- Ensure the availability of offline enumeration modes.
- Deploy digital assistance centres in rural and underdeveloped areas.

Capacity Building:

- Intensive training programs for enumerators and supervisors.
- Conduct pilot tests in varied geographic and demographic regions.

Adopt Strong Cybersecurity Protocols:

- Collaborate with cybersecurity agencies like CERT-In.
- Use end-to-end encryption and secure cloud-based storage.

Effective Communication Strategy:

- Launch multilingual awareness campaigns to inform citizens about the process and its significance.
- Address misinformation and public fears regarding data misuse.

Independent Monitoring and Oversight:

- Appoint a National Census Oversight Committee, including experts from academia, civil society, and the tech sector.

Post-Census Utilisation:

- Leverage updated data for evidence-based policymaking.
- Update baselines for poverty, malnutrition, employment, and migration metrics.

Flexibility in Implementation:

- Ensure that technological glitches or political delays do not compromise data quality.
- If necessary, allow staggered implementation across regions.

Conclusion

The Census 2027 is poised to be a landmark in India's statistical and administrative history, bringing the first-ever digital transition to a time-tested process. However, its success hinges on robust technological infrastructure, inclusive outreach, and transparent governance. In an age of data-driven governance, the Census is not merely a headcount. It is a foundational pillar that informs national priorities, defines electoral constituencies, and guides social justice delivery.

Main question

How will India’s first digital Census in 2027 address long-standing demographic, technological, and political challenges while ensuring inclusive and accurate population data?

Which of the following is the most constitutionally contentious issue surrounding the integration of NPR with the Census?

a) It violates the Census Act, 1948
b) It may conflict with the constitutional guarantee of equality under Article 14
c) It contradicts the Directive Principles of State Policy
d) It overlaps with the Election Commission's voter list preparation

Answer: b) It may conflict with the constitutional guarantee of equality under Article 14

How DNA Identification Works: Science, Forensics, and Public Trust

Why in the News?

In June 2025, an Air India Dreamliner aircraft crashed near Ahmedabad, killing all passengers on board. Due to the intensity of the crash, many victims' bodies were mutilated beyond recognition. In such cases, traditional identification methods like visual confirmation or fingerprints prove insufficient.

- Authorities resorted to DNA-based identification to match the remains with reference samples obtained from family members and personal belongings.
- This method, though time-consuming and resource-intensive, ensured precise identification and reinforced public awareness about the power and limitations of DNA forensics.
- The incident has reignited national discussions on strengthening forensic capabilities, implementing legal safeguards, and modernising the infrastructure required for timely and ethical DNA identification, especially in a populous and disaster-prone country like India.

Background: What Is DNA and Why Is It Unique?

Deoxyribonucleic Acid (DNA) -The Blueprint of Life

DNA is a long, double-helix molecule composed of four nucleotide bases: Adenine (A), Thymine (T), Cytosine (C), and Guanine (G). These bases form specific sequences that carry genetic instructions for building and operating an organism.

The entire DNA sequence of an individual is referred to as their genome.

- Every individual's DNA is unique, except for monozygotic (identical) twins.
- Human cells, except for red blood cells, contain DNA, primarily within the nucleus and mitochondria.
- This uniqueness makes DNA an ideal tool for identifying individuals when other methods fail.

Use of DNA in Forensic Identification

DNA fingerprinting, also known as DNA profiling or typing, was first developed in 1984 by British geneticist Alec Jeffreys. Since then, it has become the gold standard for forensic investigations worldwide.

- In India, it is increasingly being used in criminal cases, paternity tests, and mass disaster identification.
- The core idea is simple: if a DNA sample from an unknown body can be matched to a sample from a known individual (or their relative), identity can be confirmed with a high level of accuracy.

Features: How DNA Identification Works in Practice

Sample Collection

- **From Deceased Individuals:** Tissues such as blood, muscle, hair follicles, teeth, and bones can be used.

In severely degraded conditions, bones and teeth are the most reliable sources.

- **From Families:** Buccal swabs (cheek cells) or personal items like toothbrushes, razors, or combs can provide usable reference samples.

DNA Extraction and Amplification

- The DNA is carefully extracted using chemical solutions or mechanical disruption methods.
- The quantity is often small or degraded, especially in disaster cases. Therefore, Polymerase Chain Reaction (PCR) is used to amplify the DNA, making billions of copies for easier analysis.

Methods of DNA Analysis

Short Tandem Repeat (STR) Analysis

- Focuses on specific regions of the DNA that contain short, repeating sequences.
- These repeats vary significantly among individuals.
- STR analysis is the most widely used method and forms the backbone of most national DNA databases.

Mitochondrial DNA (mtDNA) Analysis

- Mitochondria are cell structures with their DNA, passed down only through the maternal line.
- mtDNA is more robust in degraded samples and useful when nuclear DNA is not available.
- It can trace lineage, but is less unique than STR.

Y-Chromosome Analysis

- Target markers on the Y chromosome, inherited father-to-son.
- Especially useful for identifying male individuals when paternal relatives are available for reference.

Single Nucleotide Polymorphism (SNP) Analysis

- Focuses on minute variations at single-nucleotide points.
- Effective in severely degraded DNA.
- It can be used to distinguish between close relatives and enhance discriminatory power.

Matching and Reporting

- DNA sequences are compared using software algorithms.
- A statistical probability is calculated to express the likelihood that the samples come from the same individual or family.
- Results are peer-reviewed and documented in detailed forensic reports.

Challenges: Scientific, Legal, and Ethical Hurdles

Sample Degradation and Quality

- In cases involving fire, drowning, or prolonged exposure, DNA can degrade beyond usability.
- Such conditions may necessitate advanced methods like mtDNA or SNP, which are more expensive and less accessible.

Infrastructure Limitations

- India has very few accredited high-throughput DNA labs capable of handling large volumes during disasters.
- Many states lack even basic forensic labs, leading to delays in testing and reporting.
- Transporting samples across states can further degrade the sample quality due to poor preservation protocols.

Privacy and Data Protection

- DNA carries sensitive personal information, including genetic predisposition to diseases.
- India does not yet have a comprehensive Data Protection Law that governs the collection, use, and storage of DNA profiles.
- In the absence of legal safeguards, concerns about state surveillance, misuse by private parties, and wrongful profiling remain high.

Lack of Legal Framework

- The DNA Technology (Use and Application) Regulation Bill, 2019, aims to regulate DNA usage but has not yet been enacted.
- In the absence of a legal mechanism, guidelines remain fragmented and vary across investigative agencies.

Costs and Delays

- DNA testing is expensive, with each test costing anywhere between ₹5,000 to ₹25,000.
- Mass identification efforts, such as in aviation accidents or natural disasters, involve high cumulative costs.
- Testing, matching, verification, and reporting take time, delaying closure for families.

Capacity and Training Gaps

- There is a shortage of trained forensic professionals in India.
- First responders and police personnel often mishandle biological samples, leading to contamination or degradation.

Public Trust and Misinformation

- People are often reluctant to provide DNA samples, fearing surveillance or misuse.

Way Forward: Strengthening Forensic Science for 21st Century India

Enact Robust Legal Frameworks

- Expedite the passage of the DNA Technology Regulation Bill.
- Include provisions for consent, oversight, appeal mechanisms, and penalties for misuse.
- Align the framework with the upcoming Digital Personal Data Protection Act.

Establish Regional DNA Laboratories

- Set up advanced, accredited forensic labs in every zone or state under public-private partnerships (PPP).
- Link labs with disaster management authorities and hospitals for real-time coordination.

Standardise Collection and Chain of Custody Protocols

- Create a unified national protocol for biological sample collection, transport, and storage.
- Provide body cameras and forensic kits to field personnel to ensure accountability.

Capacity Building and Training

- Train police, paramedics, and disaster response teams on handling biological evidence.
- Launch postgraduate courses in forensic genomics and bioinformatics.

Promote Awareness and Trust

- Run multilingual awareness campaigns on the humane and legal uses of DNA.
- Clarify that forensic DNA profiling only targets identity markers, not disease or ancestry.

Leverage Technology and AI

- Use artificial intelligence (AI) and machine learning (ML) tools to speed up matching processes.
- Create anonymised national databases for faster disaster identification using secure blockchain storage.

Humanitarian Focus in Disaster Contexts

- Integrate DNA identification into National Disaster Management Authority (NDMA) protocols.
- Create a "DNA Assistance Desk" for families during mass casualty events, offering counselling and legal support.

Conclusion

The use of DNA in forensic identification is a testament to the power of science in delivering truth, justice, and closure in the face of human tragedy. While India has made significant strides in DNA technology adoption, the Air India crash has once again exposed gaps in infrastructure, legal clarity, and public trust.

Moving forward, India must treat DNA forensics not merely as a technological tool but as a pillar of humane governance, guided by transparency, ethics, and constitutional protections. With the right investments, laws, and education, DNA profiling can become a cornerstone of India's efforts in disaster response, law enforcement, and human rights protection.

MAIN QUESTION

How does DNA-based identification work, and what are its key applications and challenges in the Indian context? Discuss recent incidents involving disaster victim identification.

Q. About DNA identification, consider the following statements:

1. Short Tandem Repeat (STR) analysis targets mitochondrial DNA and is highly useful in degraded samples.
2. Y-STR analysis can be used to establish maternal lineage across generations.
3. Single-nucleotide polymorphism (SNP) analysis is suitable when only degraded DNA is available.

Which of the statements given above is/are correct?

A. 1 only
B. 2 and 3 only
C. 3 only
D. None

Answer: C. 3 only

Explanation:

- **Statement 1 is incorrect**: STR uses nuclear DNA, not mitochondrial DNA.
- **Statement 2 is incorrect:** Y-STR is for paternal, not maternal, lineage.
- **Statement 3 is correct:** SNP is useful when DNA is highly degraded.

Capping a Right: The 60% MGNREGS Budget Limit and Its Rural Fallout

Why in the News?

In a significant policy shift, the Union Finance Ministry has imposed a cap of 60% on the total annual allocation for the Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) for the first half of FY 2025–26.

- This is the first time such a formal ceiling has been instituted, drawing criticism from economists, civil society groups, and state governments alike.
- As of June 2025, 28% of the budget has already been exhausted, while ₹19,200 crore in dues remain pending from the previous financial year (FY25).
- Experts argue that the move weakens the scheme's demand-driven nature and legal guarantee to work, raising significant constitutional and governance concerns.

Background: Evolution of MGNREGS

Historical Context

- Employment Guarantee Origins: The first model for employment guarantee was implemented in Maharashtra through the Employment Guarantee Scheme (MEGS) in 1965, following severe droughts and agrarian distress.
- National Push: The idea was proposed nationally in 1991 by then PM P.V. Narasimha Rao and legislatively implemented as the MGNREGA Act, 2005, during the UPA-I government under PM Manmohan Singh.

Legal Framework

- Statutory Backing: MGNREGS is not a welfare scheme but a statutory right under the MGNREGA Act, guaranteeing 100 days of unskilled manual employment to every rural household that demands it.
- Obligations: If the government fails to provide work within 15 days of application, it must pay an unemployment allowance, making it one of the few enforceable socio-economic rights in India.

Features of MGNREGS

Rights-Based Design

- Legal Entitlement: Each adult member of a rural household is entitled to 100 days of wage employment per year.
- Demand-Driven Model: Unlike supply-side schemes, MGNREGS is initiated by workers; the state must respond by provisioning funds and work.

Financial & Social Inclusion

- Minimum Wages and Proximity: Work must be within 5 km of residence and paid at minimum wage rates.
- Women's Participation: One-third of all beneficiaries must be women; in practice, over 50% of workers are women in many states.

Infrastructure and Sustainability

Work is oriented toward durable community assets like water

- harvesting structures, roads, plantation drives, and rural connectivity.
- The scheme is aligned with sustainable development goals such as poverty reduction, climate resilience, and rural empowerment.

Transparency and Accountability

- Social Audits: Mandated under the Act, conducted regularly to prevent corruption and ensure community monitoring.
- IT Systems: Electronic Fund Management System (eFMS), Aadhaar-based payments, and Management Information System (MIS) ensure fund flow transparency.

The Spending Cap: What Has Changed?

The Cap

- The Union Finance Ministry has issued orders limiting 60% of the total annual MGNREGS funds for use between April and September 2025.
- No additional liabilities will be accepted once this ceiling is reached in the first half of the fiscal year.

Fiscal Justification

- In recent years, 70–80% of the MGNREGS budget has been spent in the first six months, leaving little for the rest of the year.
- This led to significant wage delays and unpaid dues of ₹15,000–25,000 crore by year-end.
- The government argues that the cap will help in better cash management and prevent mid-year fund shortages.

Challenges Arising from the Spending Cap

Violation of the Demand-Driven Nature

- MGNREGS is legally obligated to provide work on demand.
- Capping expenditure violates Section 7 of the Act, which mandates the provision of work within 15 days of demand.
- The cap converts the scheme from demand-based to allocation-based, fundamentally altering its spirit.

Legal and Constitutional Implications

- As per Supreme Court observations (e.g., Swaraj Abhiyan vs. Union of India, 2016), the right to work under MGNREGS is enforceable.
- If funds are denied due to an administrative cap, affected citizens could approach courts for redressal.

Rural Distress Amplified

- The cap comes at a time of rising rural unemployment, falling agricultural wages, and heatwave-induced income shocks.
- Many depend on MGNREGS during agricultural lean seasons (April–June), but capped spending restricts job availability when it's needed most.

Dues from Past Years Remain

- ₹19,200 crore in unpaid dues from FY 2024-25 remain uncleared, affecting workers' trust and morale.
- The Centre is yet to reimburse states for delayed payments, pushing several local bodies into financial crises.

Misalignment with Climate Resilience and Labour Goals

- MGNREGS is a key rural adaptation strategy in climate-vulnerable areas.

- It supports ecological restoration (soil conservation, water bodies) and disaster-proofing.
- The cap could stifle long-term rural resilience building.

State Governments Disempowered

- MGNREGS is co-governed with the states via Gram Panchayats.
- States now lack financial predictability and cannot plan demand-intensive projects effectively.

Way Forward

Reaffirm Demand-Driven Principles

- Remove the cap and return to a responsive funding model that meets actual job demands as recorded in MIS.
- Make expenditure elastic based on real-time needs, rather than capped at arbitrary percentages.

Clear Past Dues

- Immediately disburse pending liabilities from FY25 to restore trust in the system.
- Introduce a mechanism to automatically compensate workers if delays occur, using digital dashboards.

Strengthen Planning Tools

- Deploy predictive analytics and satellite-based demand forecasting to anticipate high-demand seasons.
- Integrate climate risk maps with MGNREGS job cards to prioritise areas needing ecological restoration.

Legislative Safeguards

- Amend the MGNREGA Act to prohibit arbitrary administrative caps.
- Strengthen legal provisions for timely fund release, possibly by fixing quarterly minimum obligations.

Boost Budgetary Allocation

- Increase total MGNREGS budget allocation to at least 1.5–2% of GDP, especially during economic slowdowns or crises.
- This will ensure buffer availability for unforeseen surges in job demand.

Empower Gram Panchayats

- Ensure advance release of untied funds to Panchayats for seasonal project readiness.
- Encourage convergence of MGNREGS with other schemes (e.g., PMKSY, Jal Jeevan Mission) for durable asset creation.

Conclusion

The imposition of a 60% expenditure cap on MGNREGS strikes at the heart of its legal and moral foundation, guaranteed rural employment on demand. While fiscal prudence is a valid concern, it should not come at the cost of constitutional rights, rural livelihoods, and social equity. As India navigates economic uncertainty, climate challenges, and rural joblessness, a robust and flexible MGNREGS is more essential than ever.

Q. About the Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS), consider the following statements:

1. The scheme mandates a minimum of 33% participation by women in wage employment.
2. The Union Government can legally cap MGNREGS expenditure under the provisions of the MGNREGA Act, 2005.
3. MGNREGS is a demand-driven scheme and not supply-driven in nature.

- The unemployment allowance under MGNREGS is paid by the Central Government if work is not provided within 15 days of demand.

Which of the above statements is/are correct?
A. 1 and 3 only
B. 1, 3, and 4 only
C. 2 and 4 only
D. 1, 2, and 3 only
Answer: A. 1 and 3 only

Explanation:
Statement 1 is correct: At least one-third of the beneficiaries must be women.
Statement 2 is incorrect: The MGNREGA Act does not allow the Centre to cap expenditure; it is legally obligated to fund work demanded under the Act.
Statement 3 is correct: The scheme is demand-driven; work must be provided when demanded.
Statement 4 is incorrect: The unemployment allowance is to be paid by the State Government, not the Centre.

Spartaeus karigiri: India's First Jumping Spider of Its Genus Discovered in Karnataka

Why in the News?

Researchers from Chennai have discovered a new species of jumping spider, Spartaeus karigiri, in the Karigiri Hills (Elephant Hill) of Devarayanadurga, Karnataka.

- This is the first time the Spartaeus genus has been recorded in India, extending its known range from Southeast Asia into the Indian subcontinent.

Background

- **Salticidae Family:** Jumping spiders belong to the Salticidae family, known for their acute vision, agile jumps, and intelligent hunting strategies.
- **Spartaeinae Subfamily:** Within this, the Spartaeinae subfamily includes spiders that often engage in predatory mimicry and web-invasion hunting, unlike web-building spiders.
- **Global Distribution:** The Spartaeus genus was previously known only in Southeast Asia, making this discovery a significant biogeographic expansion.

Features of Spartaeus karigiri

Taxonomy:

- **Family: Salticidae (Jumping Spiders)**
- **Subfamily: Spartaeinae**
- **Genus: Spartaeus**
- **Species: karigiri**
- Naming Origin: Named after Karigiri Hill, the location of its first identification.

Physical Traits:

- Compact body with visual organs adapted for depth perception and motion detection.
- Typical predatory structures seen in Spartaeinae genus members.

Behavioural Characteristics:

- Expected to use web-invasion tactics, where it hunts other spiders by invading their webs.
- May display prey mimicry, imitating the vibrations or behaviour of trapped insects to lure predators.

Habitat:

- Found in rocky and forested microhabitats, particularly in shaded crevices and leaf litter.
- Also spotted in Villupuram district, Tamil Nadu, indicating possible ecological connectivity across the southern peninsula.

Challenges and Significance

Biodiversity Mapping:

- India's spider biodiversity remains underexplored, especially in niche and non-urban habitats.
- New species like Spartaeus karigiri highlight the richness of the Western Ghats and Eastern Ghats interface.

Habitat Threats:

- These microhabitats are vulnerable to deforestation, quarrying, and climate change, which can endanger newly

identified species before they are studied in detail.

Taxonomic Gaps:
- Limited funding and training in taxonomy and arachnology (the study of spiders) result in under-documentation of native species.

Conservation Blind Spot:
Spiders often receive low conservation priority, despite playing essential roles in ecosystems as biological pest controllers.

Way Forward
Strengthen Taxonomic Research:
- Encourage research institutions and universities to build arachnological capacity through fellowships, fieldwork, and taxonomy training.
- Digitise and share spider species databases.

Protect Microhabitats:
- Recognise microecosystems like Karigiri Hill as biodiversity hotspots, warranting legal protection.
- Integrate spider habitats into eco-sensitive zone policies.

Public Awareness & Citizen Science:
- Promote citizen science platforms like iNaturalist and India Biodiversity Portal for reporting and mapping spider sightings.
- Conduct spider walks and community-based biodiversity education.

Integration with Ecosystem Services:
- Highlight spiders' role in natural pest control in agriculture and forestry to foster public appreciation and protection.

Inter-State Biodiversity Corridors:
- Explore habitat connectivity between Karnataka and Tamil Nadu, ensuring that species like Spartaeus karigiri are included in corridor conservation models.

Conclusion
The discovery of Spartaeus karigiri marks a milestone in Indian arachnology and underlines the unexplored richness of India's microhabitats. As India's environmental policies evolve, it is imperative to integrate lesser-known taxa like spiders into mainstream conservation and research agendas.

MAIN QUESTION
How does the discovery of Spartaeus karigiri expand our understanding of India's arachnid biodiversity, and what does it imply for ecological research and conservation efforts in underexplored habitats?

Q. About the newly discovered spider species Spartaeus karigiri, consider the following statements:

1. Spartaeus karigiri is the first species from the Spartaeinae subfamily recorded in India.
2. Members of the Spartaeus genus are typically web-dwelling ambush predators that lack visual hunting capabilities.
3. The species was discovered only in Tamil Nadu's Villupuram district.
4. Spartaeinae spiders are known to use mimicry and web-invasion tactics in predation.

Which of the statements given above is/are correct?

A. 1 and 2 only
B. 1 and 4 only
C. 2 and 3 only
D. 3 and 4 only

Correct Answer: B. 1 and 4 only

Statement 2 is incorrect: Spartaeinae are visual hunters, not web-dwelling passive predators.

Statement 3 is incorrect: The species was discovered in both Karnataka (Karigiri hills) and Tamil Nadu.

Census Will Include Caste Enumeration, Says Home Ministry

Why in the News?

On June 17, 2025, the Ministry of Home Affairs (MHA) reiterated through a post on X that the forthcoming Census will include caste enumeration. This statement comes in response to criticism from the opposition, particularly the Congress Party, which had claimed that the recent Gazette notification regarding Census 2027 was silent on caste data collection. The MHA clarified that caste enumeration had already been mentioned in earlier press releases and would be part of the upcoming digital Census.

Background

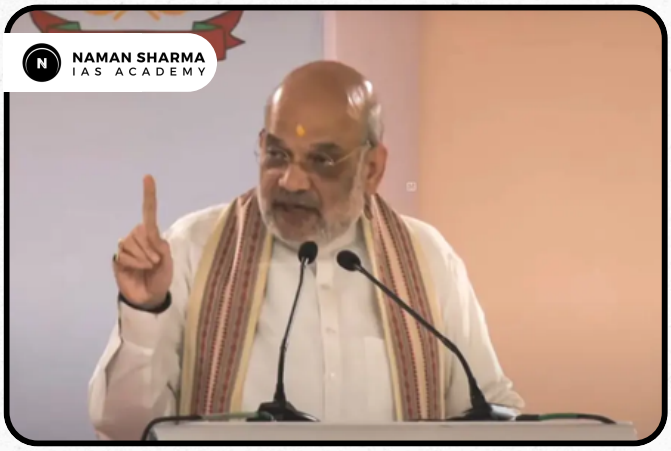
- **Census in India:** Conducted every 10 years under the Census Act, 1948. The last Census was in 2011; the 2021 Census was delayed due to COVID-19.

Caste Data Collection History:

- The 2011 Census included a Socio-Economic and Caste Census (SECC), but caste data (except for SCs/STs) was never released due to concerns over data quality.
- Successive governments have shied away from releasing or collecting detailed caste data at the national level.

Recent Political Context:

- Growing demand for a caste census from various political parties like Congress, RJD, and DMK.
- States like Bihar, Karnataka, and Telangana have already conducted state-level caste surveys.



- PM Modi had earlier dismissed caste census demands, calling proponents "urban Naxals" in April 2024, leading to sharp opposition criticism.

Feature: What Is New in the Census Notification

- **Inclusion of Caste Enumeration:** The MHA confirms that caste will be part of the Census data.
- **Clarification of Misinformation:** The Centre claimed that media and political parties are misrepresenting facts.
- **Digital Census**: Census 2027 will use mobile apps and digital platforms to collect data.
- **Central Responsibility**: Census is a Union subject under Entry 69 of the Union List (Seventh Schedule).

Challenges

Lack of Mention in the Official Notification:

- The Gazette notification does not explicitly state “caste enumeration,” leading to confusion.
- Critics argue that mere press releases cannot substitute for legal and procedural clarity.

Political Mistrust:

- Opposition parties suspect political flip-flops and a lack of genuine intent.

- The Congress has termed the move a "damp squib," accusing the government of reluctance and tokenism.

Data Quality & Methodology:

- The 2011 SECC data had errors, leading to concerns about the reliability of caste enumeration.
- Capturing India's complex caste matrix is a logistical and statistical challenge.

Centre-State Tensions:

- States like Bihar and Karnataka have gone ahead with independent surveys, citing inaction by the Centre.
- This raises legal questions and risks data fragmentation and policy confusion.

Scope of Data:

- Unlike the Telangana model, the Centre's approach may lack socio-economic indicators tied to caste, which are critical for evidence-based welfare planning.

Way Forward

Explicit Policy Communication:

- The Centre must spell out in the Census documentation how and when caste data will be collected and used.
- Avoid ambiguity in official notifications to prevent political misinterpretation.

Robust Methodology

- Ensure scientific tools, trained enumerators, and third-party audits for credible caste data.
- Draw on lessons from SECC 2011 and Telangana's recent model.

Integration of Socio-Economic Data:

- Go beyond headcounts, collect data on education, income, landholding, health, and employment stratified by caste.
- This enables targeted policy formulation and affirmative action.

Collaborative Federalism:

- Encourage Centre-State cooperation in data sharing, methodology, and implementation.
- Standardise state-level surveys under national guidelines for consistency.

Legal and Institutional Preparedness:

- Amend or strengthen the Census Act, 1948, if needed, to formally include caste enumeration.
- Create safeguards for privacy, data security, and non-discriminatory use of caste data.

Conclusion

The Centre's clarification that caste enumeration will be part of Census 2027 marks a potential policy shift after decades of hesitation. However, the absence of clear language in the Gazette notification, political scepticism, and past failures in caste data management mean that much depends on transparency, methodology, and intent. A credible caste census, done right, can provide the empirical basis for social justice and inclusive development in India.

Bridging the Digital Divide: Analysing Internet Access and Digital Skills in India

Why in the News?

The Comprehensive Annual Modular Survey (CAMS) 2022–23, conducted by the National Sample Survey Office (NSSO), has revealed critical insights into India's digital landscape. It is the first large-scale survey of digital access and skills at both the household and individual levels in India. While broadband access is now widespread, the survey uncovers deep inequalities based on income, gender, caste, and region, as well as a worrying gap in functional digital skills.

Background

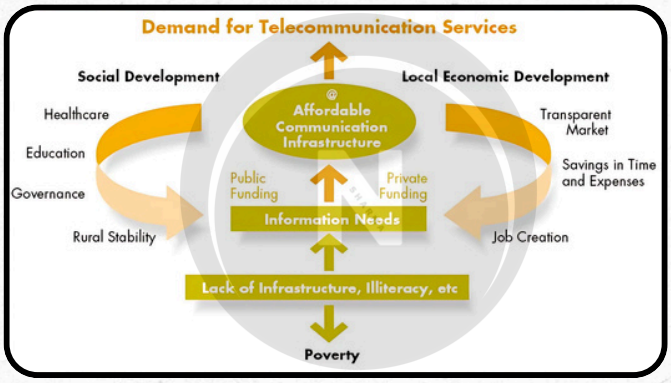
- Digital India Mission (2015) aimed to transform India into a knowledge economy by expanding internet connectivity and digital services.
- BharatNet Project and PM-WANI were launched to bridge rural connectivity gaps.
- NEP 2020 and SDG 4 (Quality Education) emphasise digital literacy and e-learning.
- Despite these efforts, India continues to face a persistent digital divide that reflects broader social and economic inequalities.

Feature

Key findings from CAMS 2022–23:

Broadband Access:

- 76.3% of Indian households have broadband access.
- Urban-rural disparity: >90% in Delhi vs 60.2% in Arunachal Pradesh.
- Caste-wise disparity: 84.1% (General), 69.1% (SC), 64.8% (ST).



Mobile Phone Ownership:

- 94% of rural households own mobile phones.
- However, independent mobile use by women is low:
- Only 25.3% of rural General category women use mobile phones independently

Digital Skills:

- Email Usage: Only 20% of rural and 40% of urban users can send or receive emails.
- Spreadsheet Skills: Less than 40% can do basic arithmetic on digital platforms.
- Online Banking: Just 37.8% of people aged 15+ can perform banking transactions online.

Economic Inequality:

- Top vs Bottom Income Decile:
- Broadband access: 98.1% (top) vs 28.4% (bottom).
- Affordability is a key barrier to connectivity and usage.

Challenges

Affordability and Access Gaps:

- High cost of devices and internet for the poorest.
- Nearly three-fourths of bottom-decile households lack broadband.
- Gender and Social Barriers:
- Women, particularly from SC/ST backgrounds, face limited access and control over devices.

- Patriarchal norms limit digital freedom and literacy.

Low Digital Literacy:
- Limited ability to use digital services meaningfully (e.g., for education, employment, banking).

Urban-Rural Divide:
- Urban areas benefit from better infrastructure and exposure.
- Rural areas lack trained facilitators and local language digital content.

Lack of Institutional Support:
- Digital literacy is not uniformly integrated into school curricula.
- Public infrastructure like Common Service Centres (CSCs) is underutilised or unevenly spread.

Way Forward

Recognise the Internet as a Basic Utility:
Treat broadband like water and electricity.
- Provide subsidised or free connections to low-income households.
- Expand the PM-WANI public Wi-Fi scheme.

Universal Digital Literacy Campaign:
- Launch large-scale digital education programs under Skill India and Digital Saksharta Abhiyan.
- Include email, banking, online forms, digital safety, and apps in the curriculum.

Focus on Marginalised Groups:
- Special training camps and subsidies for SC/ST/OBC/women-headed households.
- Promote community digital learning hubs in rural areas.

Women-Centric Digital Policies:
- Implement schemes like mobile voucher programs for women.
- Link digital inclusion with Self-Help Groups (SHGs) and Anganwadi centres.

Strengthen School and Higher Education Curriculum:
- Integrate ICT-based learning in schools through the National Digital Education Architecture (NDEAR).
- Equip students with digital financial literacy and online safety skills.

Local Language Content and Interfaces:
- Promote vernacular interfaces to bridge linguistic barriers.
- Develop voice-command and AI-driven platforms for users with low literacy.

Robust Monitoring and Policy Feedback:
- Use CAMS-like surveys annually to track improvements and recalibrate interventions.

Conclusion
India's digital transformation remains uneven, reflecting the country's broader social stratifications. While access is increasing, meaningful digital participation remains a challenge due to low skill levels, affordability gaps, and socio-cultural norms. Bridging this divide is not just a technological task, but a socio-political and educational imperative, necessary to achieve SDG 4 (Quality Education), SDG 5 (Gender Equality), and SDG 10 (Reduced Inequalities). A targeted, inclusive and skill-based digital strategy is vital to ensure no citizen is left behind in the digital age.

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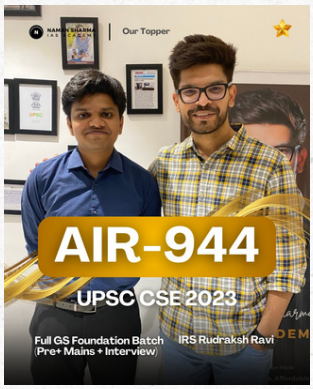

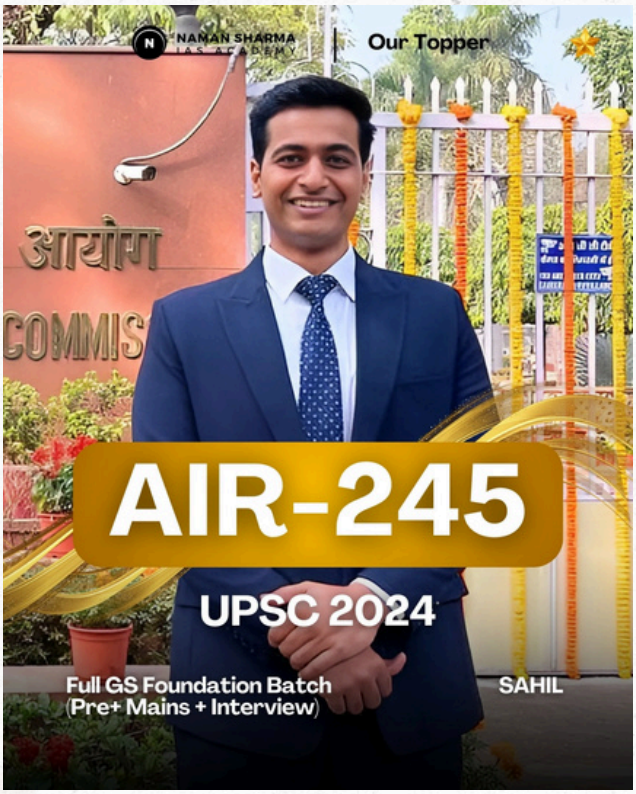

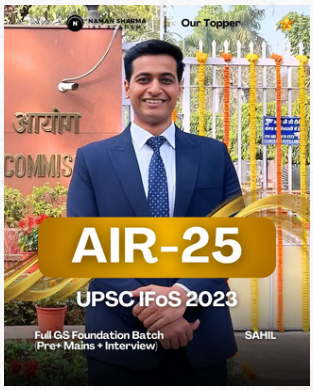

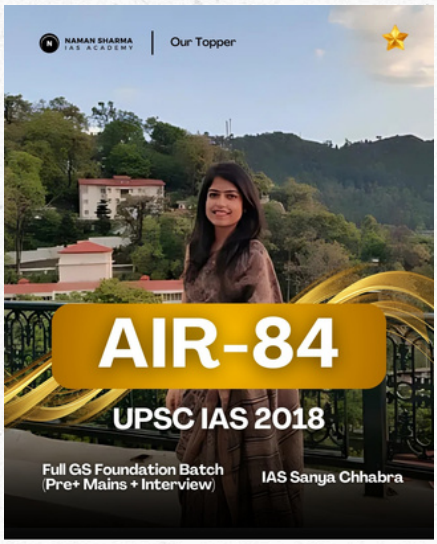

Vipan Kumar
AIR-4, HPAS 2022

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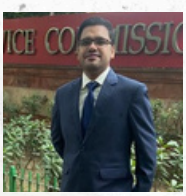
Kirti Sharma
AIR-35, PCS 2021



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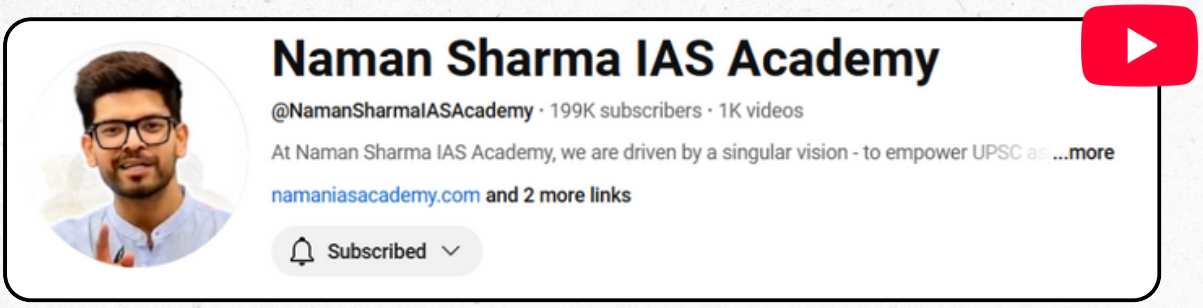

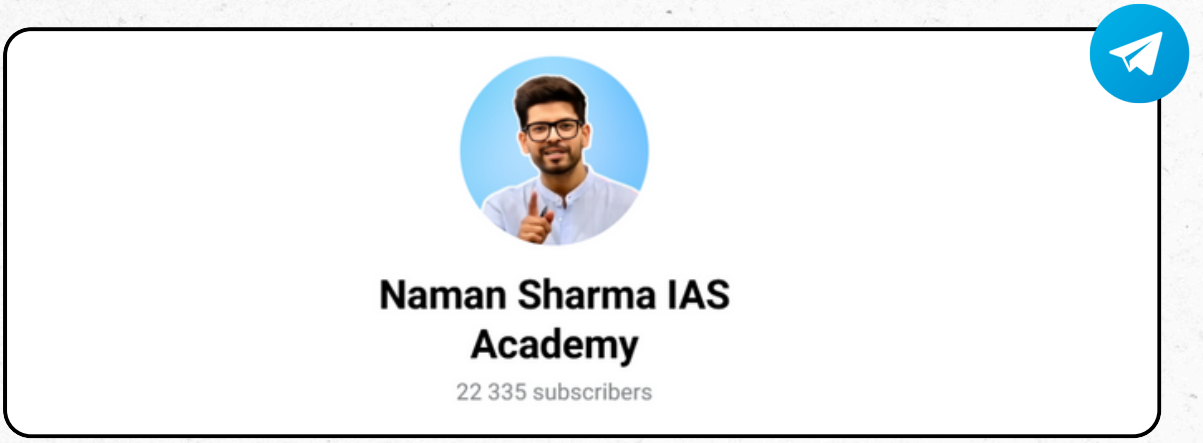

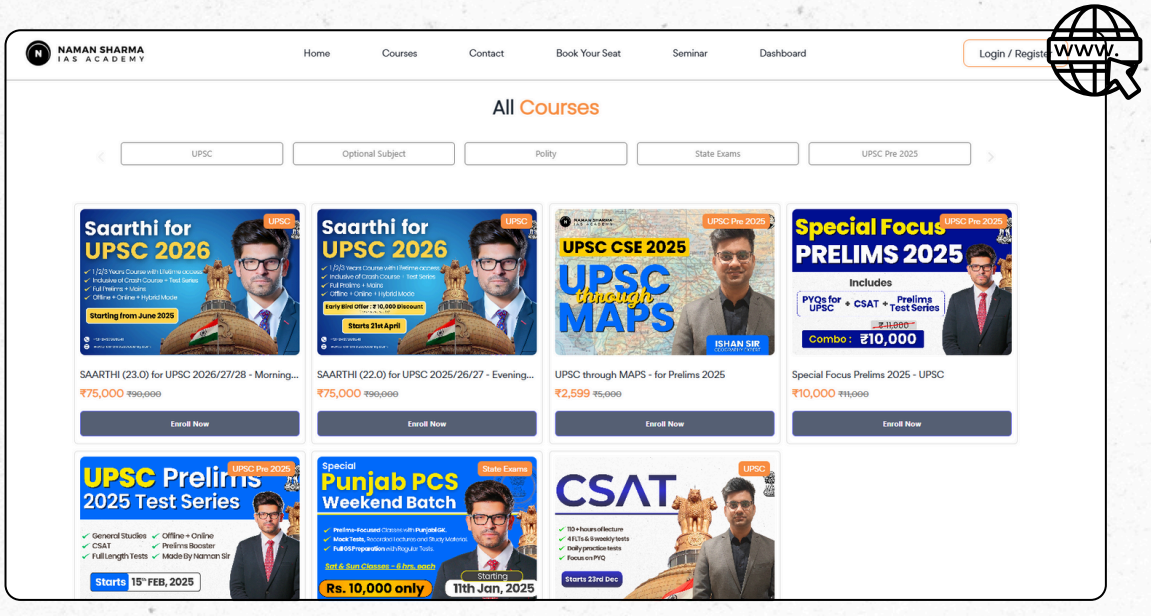

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