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QUESTION & ANSWERS

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Polity and Governance

Q1. Justice B.V. Nagarathna's dissent in the elevation of Justice Vipul Pancholi highlights the role of judicial dissent in safeguarding the future of the judiciary. Discuss the constitutional provisions, precedents, and significance of dissenting opinions in maintaining the independence and credibility of the Supreme Court Collegium system. (15 marks, 250 words)

Topic –Supreme Court Collegium system

Source: The Hindu

<https://www.thehindu.com/news/national/a-dissent-to-safeguard-the-future/article70001293.ece>

Introduction	Judicial dissent plays a vital role in constitutional democracies, ensuring that alternative voices are recorded and future generations can evaluate the judicial process. Recently, Justice B.V. Nagarathna, the lone woman judge of the Supreme Court, dissented against the elevation of Justice Vipul Pancholi to the apex court. Her note invoked constitutional principles of judicial independence, transparency in appointments, and adherence to established criteria such as merit, integrity, seniority, and diversity. This episode revives debates on the credibility of the Collegium system and the importance of dissent in protecting institutional integrity.
Body	<ul style="list-style-type: none">• Constitutional Basis of Judicial Appointments• Evolution of the Collegium System and Judicial Precedents• Justice Nagarathna's Grounds of Dissent• Role and Significance of Judicial Dissent• Balancing Collegium Credibility with Accountability
Conclusion	Justice B.V. Nagarathna's dissent is not merely about an individual appointment but about protecting the long-term credibility of the Supreme Court and its Collegium system. By invoking constitutional provisions, past precedents, and the principles of diversity and transparency, her note underscores that judicial independence must remain uncompromised. In a democracy where the judiciary is the guardian of the Constitution, dissent becomes an instrument to safeguard the future of justice itself.

UPSC Syllabus	Supreme Court Collegium system
Why was this question asked?	Q. "Constitutionally guaranteed judicial independence is a prerequisite of democracy." Comment. [2023]

Introduction

Judicial dissent plays a vital role in constitutional democracies, ensuring that alternative voices are recorded and future generations can evaluate the judicial process. Recently, Justice B.V. Nagarathna, the lone woman judge of the Supreme Court, dissented against the elevation of Justice Vipul Pancholi to the apex court. Her note invoked constitutional principles of judicial independence, transparency in appointments, and adherence to established criteria such as merit, integrity, seniority, and diversity. This episode revives debates on the credibility of the Collegium system and the importance of dissent in protecting institutional integrity.

Body

Constitutional Basis of Judicial Appointments

- **Articles 124(2) & 217:** Judges of the Supreme Court and High Courts are appointed by the President in consultation with judges of the Supreme Court and High Courts.
- **Article 50 (Directive Principle):** Separation of the judiciary from the executive to ensure impartiality.
- **Basic Structure Doctrine (Kesavananda Bharati, 1973):** Judicial independence is part of the Constitution's basic structure, limiting executive interference.
- Thus, the Collegium system, though judicially evolved, operates within this constitutional framework.

Evolution of the Collegium System and Judicial Precedents

- **First Judges Case (1981):** Held executive primacy in appointments.
- **Second Judges Case (1993):** Shifted primacy to judiciary; established Collegium system.
- **Third Judges Case (1998):** Expanded Collegium to include CJI and four senior-most judges.
- **NJAC Judgment (2015):** Struck down the 99th Constitutional Amendment; reiterated judicial primacy to shield appointments from executive pressure.
- Justice Madan B. Lokur in NJAC case warned that executive dominance would “cripple justice administration” as the government is the largest litigant.

Justice Nagarathna's Grounds of Dissent

- **Merit & Integrity:** Questioned past concerns regarding Justice Pancholi's transfer from Gujarat to Patna High Court.
- **Seniority & Representation:** Noted availability of more senior judges, and lack of representation from High Courts such as J&K, Odisha, and Uttarakhand.
- **Diversity Criterion:** Emphasized Collegium's 2024 resolution

to ensure gender, regional, and community inclusion.

- **Future Implications:** Raised alarm about the long-term effect as Justice Pancholi is in line to be CJI (2031–33).
- **Institutional Credibility:** Warned that bypassing due deliberation would weaken trust in the Collegium system.

Role and Significance of Judicial Dissent

- **Constitutional Function:** Dissent prevents majoritarian uniformity, enriching constitutional interpretation.
- **Historical Examples:**
 - Justice Fazl Ali's dissent in *A.K. Gopalan (1950)* laid foundation for due process jurisprudence.
 - Justice H.R. Khanna's dissent in *ADM Jabalpur (1976)* became a beacon for liberty during Emergency.
 - Justice Nagarathna's dissent in *Demonetisation Case (2023)* highlighted procedural lapses in executive decision-making.
- **Democratic Value:** Dissenting opinions often shape future legal doctrines and safeguard minority viewpoints within the judiciary.

Balancing Collegium Credibility with Accountability

- **Transparency:** Collegium resolutions and dissent notes must be published to enhance trust.
- **Checks and Balances:** While Collegium ensures judicial independence, it must not disregard seniority, diversity, or integrity.
- **Need for Reform:** Calls for an institutionalised **Judicial Appointments Commission** with safeguards to prevent executive dominance, while incorporating broader representation.
- **Way Forward:** Justice Nagarathna's dissent signals the need to strengthen institutional processes rather than weaken them.

Conclusion

Justice B.V. Nagarathna's dissent is not merely about an individual appointment but about protecting the long-term credibility of the Supreme Court and its Collegium system. By invoking constitutional provisions, past precedents, and the principles of diversity and transparency, her note underscores that judicial independence must remain uncompromised. In a democracy where the judiciary is the guardian of the Constitution, dissent becomes an instrument to safeguard the future of justice itself.

Q2. Should commercial speech on digital platforms be regulated? Critically discuss in light of recent Supreme Court observations, considering existing legal frameworks, constitutional principles, challenges for individual dignity, and risks of censorship. Suggest safeguards for future regulation. (15 marks, 250 words)

Topic – Role of the judiciary in balancing constitutional rights

Source: The Hindu

<https://www.thehindu.com/opinion/op-ed/should-commercial-speech-on-digital-platforms-be-regulated/article70010955.ece>

Introduction	The question of whether commercial speech on digital platforms should be regulated is at the heart of India’s balancing act between protecting fundamental freedoms and addressing emerging digital harms. With the Supreme Court recently urging the government to frame guidelines to address potentially offensive online content—particularly by social media influencers—this debate has gained new urgency. The issue presents complex challenges, as it pits constitutional guarantees of freedom of expression against legitimate concerns for public order and the dignity of vulnerable groups, requiring a nuanced approach grounded in law and principle.
Body	<ul style="list-style-type: none"> • Existing Legal Framework and Regulatory Vacuum • Constitutional Principles and Dignity • Risks of Over-Regulation and Chilling Effect • Commercial Speech: Constitutional Protection and Public Interest • Safeguards for Regulation
Conclusion	The Supreme Court’s call for regulations on commercial speech on digital platforms raises legitimate concerns about protecting vulnerable groups but must not undermine core constitutional freedoms. Existing laws already offer remedies, and any further regulation must be cautious, transparent, and respectful of free speech while defending public interest and dignity. Robust safeguards and broad consultation are critical to prevent misuse and ensure constitutional compliance.

UPSC Syllabus	Fundamental Rights and Judiciary
Why was this question asked?	Q. Examine the scope of Fundamental Rights in the light of the latest judgement of the Supreme Court on Right to Privacy. (2017)
Introduction	The question of whether commercial speech on digital platforms should be regulated is at the heart of India’s balancing act between protecting fundamental freedoms and addressing emerging digital harms. With the Supreme Court recently urging the government to frame guidelines to address potentially offensive online content—particularly by social

media influencers—this debate has gained new urgency. The issue presents complex challenges, as it pits constitutional guarantees of freedom of expression against legitimate concerns for public order and the dignity of vulnerable groups, requiring a nuanced approach grounded in law and principle.

Body

Existing Legal Framework and Regulatory Vacuum

- India's legal system already provides mechanisms to address offensive online speech, including the **Information Technology Act, 2000**, and provisions under the **Bharatiya Nyaya Sanhita, 2023**.
- Courts and executive authorities can remove content and prosecute offenders under current law; frequent invocations occur, sometimes lacking transparency and procedural fairness.
- Some experts argue there is no regulatory vacuum, and further guidelines risk being redundant or excessive in response to isolated incidents.

Constitutional Principles and Dignity

- Article 19(1)(a) guarantees **freedom of speech and expression**, subject to reasonable restrictions enumerated in Article 19(2) (public order, decency, morality, etc.).
- **Individual dignity** is not an explicit ground for curbing speech under Article 19(2), though the Supreme Court has recognized it in the context of criminal defamation (Subramanian Swamy v. Union of India, 2016).
- Relying solely on concepts like dignity, which lack precise legal definition, may create a slippery slope toward expansive censorship beyond constitutional limits.

Risks of Over-Regulation and Chilling Effect

- Overly broad guidelines could threaten **artistic freedom**, suppress comedians, satirists, and independent creators, and discourage critical or unpalatable expression.
- Supreme Court precedents uphold the protection of disagreeable or disturbing speech (e.g., Article 19(1)(a) applies even to offensive content).
- There is a risk that government-led regulation could morph into mass censorship, especially if social value is defined by the majority, stifling minority and dissenting voices.

Commercial Speech: Constitutional Protection and Public Interest

- **Commercial speech** (advertising, monetized content) is protected by Article 19(1)(a); Supreme Court in Sakal Papers v. Union of India (1962) and Tata Press v. MTNL (1995) affirmed

	<p>this.</p> <ul style="list-style-type: none">• Profit motive alone does not justify special regulation—most digital speech is now monetized, blurring lines between commercial and expressive content.• Commercial speech often advances public interest by disseminating information and fostering public debate. <p>Safeguards for Regulation</p> <ul style="list-style-type: none">• Review mechanisms and procedural safeguards must ensure respect for free speech values and prevent arbitrary takedown or censorship.• Inclusive stakeholder consultation is essential, extending beyond entities favouring restrictions to those directly affected, and the wider public.• Regulations should address existing flaws in opacity, notification, and appeal, particularly around Section 69A of the IT Act and website blocking rules.
<p>Conclusion</p>	<p>The Supreme Court’s call for regulations on commercial speech on digital platforms raises legitimate concerns about protecting vulnerable groups but must not undermine core constitutional freedoms. Existing laws already offer remedies, and any further regulation must be cautious, transparent, and respectful of free speech while defending public interest and dignity. Robust safeguards and broad consultation are critical to prevent misuse and ensure constitutional compliance.</p>

Q3. The Supreme Court’s directive to include Aadhaar as one of the valid documents for voter verification reflects the balance between procedural rigor and democratic inclusivity. Discuss the significance of this intervention in the context of electoral integrity, citizens’ rights, and institutional accountability. (15 marks, 250 words)

Topic – Electoral integrity and citizen’s rights

Source: The Hindu

<https://www.thehindu.com/opinion/editorial/decisive-intervention-on-the-supreme-court-order-the-aadhaar-card/article70030867.ece>

<p>Introduction</p>	<p>The credibility of elections depends on the accuracy and inclusiveness of electoral rolls. The Supreme Court’s order (September 2025) directing the Election Commission of India (ECI) to include Aadhaar as one of the 12 valid documents for voter verification in Bihar’s Special Intensive Revision (SIR) exercise addresses a critical gap in electoral management. This decision draws upon constitutional guarantees under Article 326, statutory frameworks like the Representation of People Act (1950), and established judicial precedents to balance the twin objectives of</p>
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	preventing fraud and protecting universal suffrage.
Body	<ul style="list-style-type: none"> • Background: The Context of the Dispute • Policy Significance of Aadhaar in Voter Verification • Judicial Precedents Shaping the Ruling • Implications for Electoral Integrity and Citizens' Rights • Challenges and the Way Forward
Conclusion	The Supreme Court's intervention provides much-needed clarity in India's electoral process. By insisting on Aadhaar's inclusion, it prevents arbitrary exclusion of millions while aligning electoral verification with prevailing identity realities. At the same time, the ruling echoes earlier judicial cautions that Aadhaar should not become an exclusive or mandatory gatekeeper. The path forward lies in combining Aadhaar-enabled efficiency with privacy safeguards, robust verification mechanisms, and institutional accountability — thereby ensuring that electoral rolls remain both accurate and representative, upholding the democratic promise of universal suffrage.

UPSC Syllabus	Electoral integrity and citizen's rights
Why was this question asked?	Q. In the light of recent controversy regarding the use of Electronic Voting Machines (EVM), what are the challenges before the Election Commission of India to ensure the trustworthiness of elections in India? (2018)
Introduction	The credibility of elections depends on the accuracy and inclusiveness of electoral rolls. The Supreme Court's order (September 2025) directing the Election Commission of India (ECI) to include Aadhaar as one of the 12 valid documents for voter verification in Bihar's Special Intensive Revision (SIR) exercise addresses a critical gap in electoral management. This decision draws upon constitutional guarantees under Article 326, statutory frameworks like the Representation of People Act (1950), and established judicial precedents to balance the twin objectives of preventing fraud and protecting universal suffrage.
Body	<p>Background: The Context of the Dispute</p> <ul style="list-style-type: none"> • Bihar's SIR exercise excluded 65 lakh electors, citing lack of valid documents. Statistical analysis showed anomalies — unusually high deletions of women voters, improbable death rates, and questionable “permanent shifts” among migrants. • The ECI had excluded Aadhaar, arguing it proved residency but not citizenship. Yet, nine of the eleven accepted documents also failed to establish citizenship conclusively. • With nearly 90% Aadhaar coverage in Bihar compared to just 2% passport penetration, Aadhaar's exclusion

disproportionately affected the poor and marginalized.

- The Court found the ECI's reasoning inconsistent and mandated Aadhaar's inclusion, subject to authenticity checks.

Policy Significance of Aadhaar in Voter Verification

- **High penetration:** Aadhaar is India's most widely held identity document, covering 1.3 billion citizens nationwide.
- **Efficiency:** Simplifies verification by reducing reliance on scarce or regionally skewed documents (passport, birth certificate).
- **Accessibility:** Restores participation for those wrongfully deleted, particularly migrant workers and women whose documentation often shifts after marriage.
- **Administrative alignment:** Ensures electoral processes adapt to the realities of India's identity infrastructure.

Judicial Precedents Shaping the Ruling

- **K.S. Puttaswamy (2017, Privacy):** Established privacy as a fundamental right, cautioning against unchecked Aadhaar use.
- **K.S. Puttaswamy (Aadhaar) v. Union of India (2018):** Upheld Aadhaar's constitutional validity but restricted its mandatory linking, while permitting use for welfare delivery and PAN verification.
- **Mohinder Singh Gill v. CEC (1978):** Asserted that free and fair elections are part of the **basic structure** of the Constitution.
- **PUCL v. Union of India (2013):** Reinforced citizens' "right to know" in elections, linking voter rights to democratic accountability.
- These judgments collectively underline the balance between accessibility, privacy, and electoral integrity — the same principles informing the Court's Aadhaar directive.

Implications for Electoral Integrity and Citizens' Rights

- **Integrity:** Aadhaar can help curb duplication and impersonation if used with authentication safeguards.
- **Inclusivity:** Prevents disenfranchisement of vulnerable groups during roll revisions.
- **Rights protection:** Reinforces that the right to vote cannot be undermined by procedural rigidity.
- **Precedent:** Provides uniform guidance for similar electoral roll revisions in other states.

Challenges and the Way Forward

- **Privacy concerns:** Past controversies highlight risks of profiling or misuse if voter data is linked with Aadhaar databases.

	<ul style="list-style-type: none"> • Exclusion risks: Errors in Aadhaar authentication (biometric mismatches, technical glitches) can still lead to wrongful deletions. • Institutional discipline: The ECI must balance speed with diligence by prioritising house-to-house verification and transparent grievance redressal. • Legal framework: Strengthening data protection laws and clear guidelines for Aadhaar use in elections is essential.
Conclusion	<p>The Supreme Court’s intervention provides much-needed clarity in India’s electoral process. By insisting on Aadhaar’s inclusion, it prevents arbitrary exclusion of millions while aligning electoral verification with prevailing identity realities. At the same time, the ruling echoes earlier judicial cautions that Aadhaar should not become an exclusive or mandatory gatekeeper. The path forward lies in combining Aadhaar-enabled efficiency with privacy safeguards, robust verification mechanisms, and institutional accountability — thereby ensuring that electoral rolls remain both accurate and representative, upholding the democratic promise of universal suffrage.</p>

Q 4. What is the significance of the Supreme Court’s interim order on the 2025 Waqf law? On what grounds was the law challenged? Which provisions did the Court uphold, and on which did it impose a stay? What are the implications for minority rights? (15 marks, 250 words)

Topic – Supreme Court’s interim order on the 2025 Waqf law

Source: The Hindu

<https://www.thehindu.com/news/national/what-is-the-significance-of-supreme-courts-interim-order-on-2025-waqf-law/article70056076.ece>

Introduction	<p>The Waqf (Amendment) Act, 2025, intended to reform the administration of waqf properties, triggered widespread debate due to concerns of excessive state control over religious institutions. Multiple petitions challenged its constitutionality under Articles 25, 26, and 30 of the Indian Constitution. On 15 September 2025, the Supreme Court issued an interim order, upholding certain provisions while staying others, thereby balancing state interests in transparency with minority rights in religious autonomy.</p>
Body	<ul style="list-style-type: none"> • Grounds of Challenge • Provisions Stayed by the Court • Provisions Upheld • Significance of the Interim Order • Implications for Minority Rights

Conclusion	The Supreme Court’s interim order on the 2025 Waqf law reflects a calibrated judicial approach—acknowledging the state’s interest in preventing misuse of waqf lands, while upholding minority communities’ right to manage their religious endowments. The final judgment will likely have a lasting impact on defining the balance between religious autonomy and regulatory oversight in India’s constitutional framework.
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UPSC Syllabus	Minority rights
Why was this question asked?	Q. Examine the scope of Fundamental Rights in the light of the latest judgement of the Supreme Court on Right to Privacy. (2017)
Introduction	The Waqf (Amendment) Act, 2025, intended to reform the administration of waqf properties, triggered widespread debate due to concerns of excessive state control over religious institutions. Multiple petitions challenged its constitutionality under Articles 25, 26, and 30 of the Indian Constitution. On 15 September 2025, the Supreme Court issued an interim order, upholding certain provisions while staying others, thereby balancing state interests in transparency with minority rights in religious autonomy.
Body	<p>Grounds of Challenge</p> <ul style="list-style-type: none"> • Violation of Religious Autonomy: Petitioners argued that empowering District Collectors to decide property disputes infringed Article 26, which guarantees the right to manage religious affairs. • Arbitrary Religious Qualification: The five-year practice requirement for creating waqf was challenged as discriminatory and intrusive into matters of faith. • Inclusion of Non-Muslims: Allowing non-Muslims on Waqf Boards and Councils was seen as dilution of minority control, allegedly violating Article 30. • Encroachment on Judicial Domain: Vesting quasi-judicial powers in executive officials contradicted the doctrine of separation of powers. <p>Provisions Stayed by the Court</p> <ul style="list-style-type: none"> • Collector’s Powers (Section 3C): Stayed, as property ownership disputes must be settled by courts/tribunals, not executive officers. • Automatic Divestment of Waqf Status: Suspended, deemed “prima facie arbitrary.” • Five-year Practice of Islam Clause: Temporarily stayed until

rules are framed, preventing arbitrary policing of religious identity.

- **Non-Muslim Representation Cap:** Limited to 4 in Central Waqf Council and 3 in State Boards.

Provisions Upheld

- **Abolition of “Waqf by User”:** Upheld prospectively, citing past misuse to encroach on government lands.
- **Mandatory Registration of Properties:** Retained, as digital records enhance transparency and accountability.
- **Applicability of Limitation Act, 1963:** Confirmed, to bring waqf disputes in line with general property law principles.
- **Ownership Requirement:** Only property owned by the dedicator can be endowed, consistent with Islamic jurisprudence.

Significance of the Interim Order

- **Judicial Balancing Act:** The Court recognized legislative intent for reform while safeguarding minority rights from arbitrary state intrusion.
- **Reinforcement of Separation of Powers:** Stayed provisions highlight that questions of property ownership fall within judicial competence.
- **Interim Relief:** Ensures waqf custodians are not dispossessed, but also bars creation of third-party rights until final adjudication.
- **Clarification on Tribal and Heritage Lands:** Affirmed that protected tribal and heritage lands cannot be declared waqf.

Implications for Minority Rights

- **Protection of Autonomy:** Upholding community rights in managing waqf institutions strengthens Article 26 and Article 30 safeguards.
- **Risk of Religious Policing:** The five-year practice clause, though temporarily suspended, raises concerns of executive intrusion into personal faith.
- **Inclusive Oversight vs. Autonomy Debate:** Limiting non-Muslim participation balances inclusivity with minority self-governance.
- **Precedent for Future Reforms:** The order signals that reforms must be constitutionally sensitive, ensuring accountability without eroding religious freedoms.

Conclusion

The Supreme Court’s interim order on the 2025 Waqf law reflects a calibrated judicial approach—acknowledging the state’s interest in

preventing misuse of waqf lands, while upholding minority communities' right to manage their religious endowments. The final judgment will likely have a lasting impact on defining the balance between religious autonomy and regulatory oversight in India's constitutional framework.

Q5. Criminal defamation has increasingly been used as a tool of intimidation rather than a legitimate means of protecting reputation. Critically examine the constitutional, legal, and democratic implications of continuing with criminal defamation in India. (15 marks, 250 words)

Topic – Freedom of speech and expression

Source: The Hindu

<https://www.thehindu.com/opinion/editorial/penalty-in-proportion-on-growing-use-of-criminal-defamation-proceedings/article70084730.ece>

Introduction	Freedom of speech and expression, guaranteed under Article 19(1)(a) of the Constitution, is a cornerstone of democratic discourse. However, this freedom is subject to reasonable restrictions under Article 19(2), including on grounds of defamation. In India, defamation may be pursued through civil remedies such as damages and injunctions, or criminal liability under Sections 499–500 of the Indian Penal Code (IPC). While the Supreme Court in <i>Subramanian Swamy v. Union of India</i> (2016) upheld the constitutionality of criminal defamation, subsequent judicial observations have highlighted its disproportionate and often misused character.
Body	<ul style="list-style-type: none"> • Constitutional and Legal Tensions • Judicial Concerns and Practical Challenges • Democratic and Institutional Implications • Comparative and International Perspectives • Way Forward: Towards Balanced Reform
Conclusion	While protecting dignity and reputation is important, criminal defamation imposes a disproportionate restriction on free speech and undermines democratic debate. The judiciary's own evolving concerns highlight the need for reform. Moving towards a civil-law-based framework, aligned with constitutional proportionality and global practices, would better balance the protection of individual reputation with the preservation of India's vibrant democratic discourse.

UPSC Syllabus

Freedom of speech and expression

Why was this question asked?	Q. What do you understand by the concept “freedom of speech and expression”? Does it cover hate speech also? Why do the films in India stand on a slightly different plane from other forms of expression? Discuss. (2014)
Introduction	Freedom of speech and expression, guaranteed under Article 19(1)(a) of the Constitution, is a cornerstone of democratic discourse. However, this freedom is subject to reasonable restrictions under Article 19(2), including on grounds of defamation. In India, defamation may be pursued through civil remedies such as damages and injunctions, or criminal liability under Sections 499–500 of the Indian Penal Code (IPC). While the Supreme Court in <i>Subramanian Swamy v. Union of India</i> (2016) upheld the constitutionality of criminal defamation, subsequent judicial observations have highlighted its disproportionate and often misused character.
Body	<p>Constitutional and Legal Tensions</p> <ul style="list-style-type: none">• The 2016 judgment equated reputation with the right to life under Article 21, thereby justifying criminal sanction.• However, imprisonment for reputational injury raises questions under the doctrine of proportionality, which requires restrictions on fundamental rights to be least restrictive.• Civil law remedies are generally adequate to redress reputational harm, suggesting criminal liability may be excessive. <p>Judicial Concerns and Practical Challenges</p> <ul style="list-style-type: none">• Recent judicial remarks (e.g., Justice M.M. Sundresh, 2025) reflect unease at the expanding use of criminal defamation to deter criticism.• Lower courts often issue summons mechanically, without assessing whether the speech actually crosses the threshold of defamation.• This results in protracted litigation, burdens on accused persons, and judicial backlogs. <p>Democratic and Institutional Implications</p> <ul style="list-style-type: none">• Criminal defamation, by attaching the threat of imprisonment to speech, creates a chilling effect on expression.• Journalists and editors face risks of arrest and repeated court appearances, leading to self-censorship.• Overbroad use of the provision can undermine the role of a free press, which is essential for democratic accountability. <p>Comparative and International Perspectives</p> <ul style="list-style-type: none">• Several jurisdictions, including the UK, USA, and Sri Lanka,

	<p>have abolished or diluted criminal defamation, relying on civil remedies instead.</p> <ul style="list-style-type: none">• The UN Human Rights Committee has emphasised that criminal defamation laws are incompatible with the International Covenant on Civil and Political Rights (ICCPR), Article 19.• India's continued reliance on criminal defamation is increasingly seen as inconsistent with evolving global democratic standards. <p>Way Forward: Towards Balanced Reform</p> <ul style="list-style-type: none">• Decriminalisation of defamation, limiting remedies to civil liability.• Judicial safeguards: higher thresholds for issuing summons to prevent frivolous or vexatious cases.• Law Commission review of defamation provisions in light of proportionality and international best practices.• Civil law strengthening: ensuring swift damages, injunctions, and retractions to provide effective redress without criminal sanctions.
Conclusion	<p>While protecting dignity and reputation is important, criminal defamation imposes a disproportionate restriction on free speech and undermines democratic debate. The judiciary's own evolving concerns highlight the need for reform. Moving towards a civil-law-based framework, aligned with constitutional proportionality and global practices, would better balance the protection of individual reputation with the preservation of India's vibrant democratic discourse.</p>

Q6. What are personality rights, and how are Indian courts protecting them in the digital era? Critically examine the challenges of balancing these rights with free expression. (15 marks, 250 words)

Topic – Personality rights and right to free expression

Source: The Hindu

<https://www.thehindu.com/news/national/what-are-personality-rights-and-how-are-courts-shielding-indian-celebrities-explained/article70083371.ece>

Introduction	<p>Personality rights safeguard an individual's identity traits—name, image, voice, likeness, signature, catchphrases—from unauthorised commercial exploitation. In the digital era, misuse through AI, deepfakes, and online platforms has intensified the threat. While India lacks a comprehensive statute, protection flows from Article 21 (Right to Life & Privacy), supported by IP laws and evolving judicial precedents.</p>
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Body	<ul style="list-style-type: none"> • Constitutional and Legal Tensions • Judicial Concerns and Practical Challenges • Democratic and Institutional Implications • Comparative and International Perspectives • Way Forward: Towards Balanced Reform
Conclusion	<p>Personality rights in India lie at the intersection of privacy, dignity, and intellectual property, and they are becoming increasingly critical in the digital economy. While courts have actively protected these rights, judicial action alone cannot provide clarity or uniformity. A balanced statutory framework is essential—one that upholds the autonomy of individuals while also protecting freedom of expression, satire, and artistic creativity in a democratic society.</p>

UPSC Syllabus	Judicial protection to Freedom of speech and expression
Why was this question asked?	Q. What do you understand by the concept “freedom of speech and expression”? Does it cover hate speech also? Why do the films in India stand on a slightly different plane from other forms of expression? Discuss. (2014)
Introduction	<p>Personality rights safeguard an individual’s identity traits—name, image, voice, likeness, signature, catchphrases—from unauthorised commercial exploitation. In the digital era, misuse through AI, deepfakes, and online platforms has intensified the threat. While India lacks a comprehensive statute, protection flows from Article 21 (Right to Life & Privacy), supported by IP laws and evolving judicial precedents.</p>
Body	<p>Legal Basis of Personality Rights in India</p> <ul style="list-style-type: none"> • The constitutional basis of personality rights lies in Article 21 of the Constitution, which protects dignity, privacy, and autonomy. • The freedom of speech under Article 19(1)(a) is often weighed against these rights, requiring a balance between expression and dignity. • The Copyright Act, 1957 provides performer’s rights under Sections 38A and 38B, enabling artists to control the use of their performances. • The Trade Marks Act, 1999 allows individuals to trademark their names, signatures, and catchphrases for exclusive commercial use. • The tort of passing off under Section 27 of the Trade Marks Act prevents unauthorised commercial exploitation that misleads

consumers or implies false endorsement.

Judicial Evolution of Personality Rights in India

- In *R. Rajagopal v. State of Tamil Nadu (1994)*, the Supreme Court recognised the right to privacy and identity control while allowing publication of material already in public records.
- In *DM Entertainment v. Baby Gift House (2010, Delhi HC)*, the court stopped the sale of dolls resembling singer Daler Mehndi but clarified that parody and satire fall under legitimate free speech.
- In *Rajinikanth v. Varsha Productions (2014, Madras HC)*, the court restrained the unauthorised use of Rajinikanth's name, image, and style, thus strengthening celebrity rights.
- In *Anil Kapoor v. Unknown Entities (2023, Delhi HC)*, the court barred the misuse of the actor's persona, including his voice and catchphrase "jhakaas," particularly in AI-generated content.
- In *Jackie Shroff (2024, Delhi HC)*, the court issued an injunction against e-commerce platforms and AI chatbots that were misusing his persona.
- In *Arijit Singh (2024, Bombay HC)*, the court prohibited AI-based voice cloning, marking one of the first cases dealing with AI identity theft.

Mechanisms of Judicial Protection

- Courts have issued injunctions to prevent the misuse of names, images, voices, and other attributes.
- They have also directed takedown orders to online platforms and intermediaries to remove infringing content.
- In several cases, courts have awarded damages or compensation for unauthorised commercial exploitation.
- At the same time, courts have permitted satire, parody, news reporting, and academic use as legitimate exercises of freedom of speech under Article 19(1)(a).

Challenges in Enforcement

- A major challenge is the absence of a comprehensive statute, which leads to fragmented protection through scattered precedents.
- The rapid growth of AI and deepfake technology has created new risks of identity theft and misuse that are hard to regulate.
- There is a tension between free expression and dignity, since overprotection of personality rights may stifle creativity, satire, and journalism.
- Personality rights are not limited to celebrities; ordinary citizens,

	<p>especially women, face serious threats through deepfakes and revenge pornography.</p> <ul style="list-style-type: none">• Enforcement remains weak, as tracking and removing every online violation across platforms is practically impossible. <p>Way Forward</p> <ul style="list-style-type: none">• India requires a comprehensive legislation on personality rights, with clear definitions and exceptions for fair use.• There is a need for regulation of AI-generated content, such as mandatory watermarking and disclosure norms.• Public awareness campaigns should empower individuals to recognise and enforce their rights.• Personality rights should be integrated with privacy law, particularly the Digital Personal Data Protection Act, 2023.• The government must also encourage the use of technological tools for automated detection and takedown of infringing content.
Conclusion	<p>Personality rights in India lie at the intersection of privacy, dignity, and intellectual property, and they are becoming increasingly critical in the digital economy. While courts have actively protected these rights, judicial action alone cannot provide clarity or uniformity. A balanced statutory framework is essential—one that upholds the autonomy of individuals while also protecting freedom of expression, satire, and artistic creativity in a democratic society.</p>

International Relations

Q7. The recent Israeli strikes on Doha have raised concerns about sovereignty violations in the Gulf. Discuss the implications of this episode for India's relations with Qatar and Israel, highlighting the challenges and opportunities in balancing strategic interests. (15 marks, 250 words)

Topic – Israeli strikes on Doha

Source: India Today

<https://www.indiatoday.in/india/story/india-condemns-violation-of-brotherly-states-sovereignty-pm-tells-qatari-emir-slams-israeli-attack-on-doha-2785288-2025-09-10>

Introduction

The Israeli airstrikes on Hamas officials in Doha (Qatar), a rare breach of a Gulf state's sovereignty, sparked widespread international condemnation. India expressed "deep concern," with the Prime Minister

	condemning the violation of sovereignty and urging resolution through dialogue and diplomacy. This episode highlights the delicate balance India must strike: Qatar is a key energy supplier and host to nearly 7.5 lakh Indians, while Israel is a critical defense and technology partner. The crisis tests India’s ability to pursue principled pragmatism in West Asia, a region central to its energy, diaspora, and strategic interests.
Body	<ul style="list-style-type: none"> • Sovereignty and Principles of International Law • India–Qatar Relations: Energy and Diaspora • India–Israel Relations: Defense and Strategic • India’s Diplomatic Balancing Act in West Asia • Strategic Implications for India
Conclusion	The Israeli strikes on Doha underline the volatility of West Asia and the high stakes for India. By condemning sovereignty violations while calling for dialogue, India demonstrated a careful balance of principle and pragmatism. Moving forward, India must safeguard its diaspora, secure its energy lifelines, deepen defense ties, and remain a credible voice for peace. Such an approach will ensure India’s strategic autonomy and preserve its role as a trusted partner to both Gulf states and Israel in a conflict-prone neighborhood.

UPSC Syllabus	India’s West Asia Policy
Why was this question asked?	Q. The question of India’s Energy Security constitutes the most important part of India’s economic progress. Analyze India’s energy policy cooperation with West Asian Countries. [2016]
Introduction	The Israeli airstrikes on Hamas officials in Doha (Qatar), a rare breach of a Gulf state’s sovereignty, sparked widespread international condemnation. India expressed “deep concern,” with the Prime Minister condemning the violation of sovereignty and urging resolution through dialogue and diplomacy. This episode highlights the delicate balance India must strike: Qatar is a key energy supplier and host to nearly 7.5 lakh Indians, while Israel is a critical defense and technology partner. The crisis tests India’s ability to pursue principled pragmatism in West Asia, a region central to its energy, diaspora, and strategic interests.
Body	<p>Sovereignty and Principles of International Law</p> <ul style="list-style-type: none"> • The strikes violated Article 2(4) of the UN Charter, which prohibits the use of force against the territorial integrity of states. • India’s response was consistent with its long-held foreign policy tradition of non-interference and respect for sovereignty, a legacy of the Non-Aligned Movement.

- By condemning the violation without directly naming Israel, India reaffirmed its credibility as a supporter of international law while retaining diplomatic flexibility.

India–Qatar Relations: Energy and Diaspora Nexus

- Qatar supplies nearly **40% of India's LNG imports**, making it central to India's clean energy transition.
- Around **7.5 lakh Indians live in Qatar**, part of the **8.5 million Indians in the GCC**, whose remittances form over **50% of India's total inward remittances**.
- Instability in Qatar directly endangers this diaspora and energy security.
- Qatar's active mediation role in Gaza peace talks complements India's consistent support for peaceful resolution of the Palestine issue.

India–Israel Relations: Defense and Strategic Convergence

- Israel is India's **third-largest defense supplier**, providing drones, missile defense systems, and precision-guided munitions critical for modernization.
- Close cooperation exists in **counter-terrorism, intelligence sharing, agriculture, and water management**.
- The 2017 visit of the Indian Prime Minister to Israel, the first ever, marked a new phase of **visible strategic partnership**.
- Yet, India cannot appear to unconditionally align with Israel without risking alienation from Gulf partners.

India's Diplomatic Balancing Act in West Asia

- Since the 1990s, India has pursued a **“multi-vector” policy**: strengthening ties with Israel while expanding Gulf partnerships.
- The **Look West Policy (2005)** and its later **Act West dimension** emphasized diaspora protection, energy, and strategic outreach.
- Historically, India recognized the PLO in 1974, supported Palestine's UN membership bid in 2011, and continues to back a **two-state solution**, even as it deepens ties with Israel.
- India's calibrated reaction to Doha reflects this dual track: defending sovereignty while keeping defense ties with Israel intact.

Strategic Implications for India

- The Doha strikes illustrate the **fragility of Gulf stability**, which directly impacts India's energy flows and expatriate safety.
- India must build **energy resilience** through diversification, while leveraging its balanced ties to enhance credibility as a stabilizing actor.

	<ul style="list-style-type: none"> • This crisis also provides scope for track-II diplomacy, where India can utilize goodwill with both Qatar and Israel to contribute to regional peace. • Balancing energy-diaspora security with defense-technology cooperation will remain the cornerstone of India’s West Asia strategy.
Conclusion	<p>The Israeli strikes on Doha underline the volatility of West Asia and the high stakes for India. By condemning sovereignty violations while calling for dialogue, India demonstrated a careful balance of principle and pragmatism. Moving forward, India must safeguard its diaspora, secure its energy lifelines, deepen defense ties, and remain a credible voice for peace. Such an approach will ensure India’s strategic autonomy and preserve its role as a trusted partner to both Gulf states and Israel in a conflict-prone neighborhood.</p>

Q 8. Amidst global geopolitical churn, India–Japan relations have maintained stability and growth. Discuss the key areas of cooperation and the challenges ahead, in light of the 15th Annual Summit (2025). (15 marks, 250 words)

Topic – 15th Annual India–Japan Summit in Tokyo

Source: The Hindu

<https://www.thehindu.com/opinion/editorial/renewed-focus-on-india-japan-ties/article69996812.ece>

Introduction	<p>India and Japan, two of Asia’s leading democracies, have steadily nurtured a partnership that is simultaneously economic, strategic, and civilisational. The two countries share a history of cultural exchanges rooted in Buddhism, post-war reconstruction cooperation, and a commitment to democratic values and rule of law. Over the years, this partnership has matured into what is termed a “Special Strategic and Global Partnership”. In 2025, when the world witnessed intense trade disputes, regional instability, and shifting power equations, the 15th Annual Summit in Tokyo between Prime Minister Narendra Modi and Prime Minister Shigeru Ishiba reaffirmed that India–Japan ties remain a pillar of stability. The agreements reached at the summit reflect not just continuity but also a forward-looking vision to equip the relationship for the challenges of a changing world order.</p>
Body	<ul style="list-style-type: none"> • Background of India–Japan Relations • Economic and Investment Cooperation • Technology and Supply Chain Resilience • Security and Strategic Cooperation • Grassroots Engagement and Geopolitical Context

Conclusion	The 2025 Summit between India and Japan demonstrated that their bilateral relationship remains both resilient and adaptive in an uncertain world. The deepening of economic linkages, supply chain security, strategic defence dialogues, and grassroots partnerships reflects the multifaceted nature of this engagement. More importantly, the summit underlined that India and Japan are committed to being anchors of a free, open, and rules-based Indo-Pacific, even as both face pressures from the United States, China, and regional instability.
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UPSC Syllabus	India-Japan Relations
Why was this question asked?	Q. ‘The time has come for India and Japan to build a strong contemporary relationship, one involving global and strategic partnership that will have a great significance for Asia and the world as a whole.’ Comment. [2019]
Introduction	India and Japan, two of Asia’s leading democracies, have steadily nurtured a partnership that is simultaneously economic, strategic, and civilisational. The two countries share a history of cultural exchanges rooted in Buddhism, post-war reconstruction cooperation, and a commitment to democratic values and rule of law. Over the years, this partnership has matured into what is termed a “Special Strategic and Global Partnership”. In 2025, when the world witnessed intense trade disputes, regional instability, and shifting power equations, the 15th Annual Summit in Tokyo between Prime Minister Narendra Modi and Prime Minister Shigeru Ishiba reaffirmed that India–Japan ties remain a pillar of stability. The agreements reached at the summit reflect not just continuity but also a forward-looking vision to equip the relationship for the challenges of a changing world order.
Body	<p>Background of India–Japan Relations</p> <ul style="list-style-type: none"> • Diplomatic relations were established in 1952, and Japan was among the first countries to extend post-war development assistance to India. • The Global Partnership (2000), the Strategic and Global Partnership (2006), and the elevation to a Special Strategic and Global Partnership (2014) have successively deepened bilateral ties. • Japan is India’s largest source of Official Development Assistance (ODA), supporting flagship infrastructure projects like the Delhi Metro and the Mumbai–Ahmedabad High Speed Rail. • Regular annual summits since 2005 have institutionalised the

relationship, ensuring continuity across leadership changes.

Economic and Investment Cooperation

- At the 2025 Summit, Japan raised its investment target in India to **\$68 billion**, supported by about **170 MoUs** with Indian companies.
- A **2035 Vision Statement** outlined eight areas of cooperation, including economic security, mobility, and green technology transitions.
- The Mumbai–Ahmedabad High Speed Rail project was highlighted as a symbol of enduring infrastructure cooperation.

Technology and Supply Chain Resilience

- Both sides agreed to build **resilient supply chains**, particularly in semiconductors, supported by Japanese technology in India.
- This initiative is also aimed at overcoming restrictions imposed by China on exports of rare earth magnets and critical minerals.
- Joint initiatives in green hydrogen, electric mobility, and digital technology were identified as areas of future growth.

Security and Strategic Cooperation

- The 2008 Security Partnership was updated to include annual **National Security Adviser (NSA)-level dialogues**.
- Both countries pledged closer engagement within the **Quad**, cooperation in the **Indo-Pacific**, and advocacy for **UN Security Council reform**.
- The joint statement strongly condemned **North Korea's missile programme** and acts of cross-border terrorism, reflecting shared regional security concerns.

Grassroots Engagement and Geopolitical Context

- A **Next-Gen State–Prefecture Partnership** was launched to boost people-to-people ties, supported by new **direct flight connectivity**.
- The summit occurred amidst **U.S. tariffs on India**, Japan's tensions with Washington, and India–China talks after a prolonged standoff.
- By choosing Japan as his first stop before engaging China, India signalled the geopolitical importance of Tokyo in balancing power in Asia.

Conclusion

The 2025 Summit between India and Japan demonstrated that their bilateral relationship remains both resilient and adaptive in an uncertain world. The deepening of economic linkages, supply chain security, strategic defence dialogues, and grassroots partnerships reflects the multifaceted nature of this engagement. More importantly, the summit

underlined that India and Japan are committed to being anchors of a free, open, and rules-based Indo-Pacific, even as both face pressures from the United States, China, and regional instability.

Q9. Despite multiple rounds of dialogue and agreements like the 1993 Border Peace and Tranquillity Agreement, India and China have failed to clearly define their boundary. Discuss the historical background, efforts made, and reasons for continued indeterminacy. (15 marks, 250 words)

Topic – India-China Relations

Source: The Hindu

<https://www.thehindu.com/news/international/india-china-the-inability-to-define-a-border/article70022239.ece>

Introduction	India and China share one of the world’s most complex and disputed borders, stretching over 3,488 km. While the 1993 Border Peace and Tranquillity Agreement (BPTA) sought to institutionalise peace, the Line of Actual Control (LAC) remains undefined. This ambiguity has kept bilateral relations vulnerable to periodic tensions.
Body	<ul style="list-style-type: none"> • Historical Background of the Dispute • Rajiv Gandhi’s 1988 Visit and Confidence-Building Measures • The 1993 Border Peace and Tranquillity Agreement (BPTA) • Reasons for Continued Indeterminacy • Way Forward
Conclusion	The India-China border remains undefined not due to lack of dialogue but because of deliberate ambiguity and mistrust. The 1993 BPTA was a milestone, yet peace is fragile as long as the LAC remains a matter of “perceptions.” A durable solution will require political will, mutual concessions, and an understanding that stability on the border is foundational to Asian peace and prosperity.

UPSC Syllabus	India-China Relations
Why was this question asked?	Q. China is using its economic relations and positive trade surplus as tools to develop potential military power status in Asia’, In the light of this statement, discuss its impact on India as her neighbour. [2017]
Introduction	India and China share one of the world’s most complex and disputed borders, stretching over 3,488 km. While the 1993 Border Peace and Tranquillity Agreement (BPTA) sought to institutionalise peace, the Line of Actual Control (LAC) remains undefined. This ambiguity has

kept bilateral relations vulnerable to periodic tensions.

Body

Historical Background of the Dispute

- The boundary was inherited from colonial legacies — the **McMahon Line** in the east (1914) and undefined frontiers in the western and central sectors.
- China never accepted the McMahon Line and laid claim to large tracts in Arunachal Pradesh, while India opposed China's claims in Aksai Chin.
- The 1962 war hardened perceptions, leaving the border unsettled and mutual distrust high.

Rajiv Gandhi's 1988 Visit and Confidence-Building Measures

- Rajiv Gandhi's landmark visit to Beijing in December 1988 restarted dialogue after decades of hostility.
- The **Joint Working Group (JWG)** was set up, holding six rounds of talks between 1988 and 1993.
- Steps included resumption of border trade (1992), reopening of consulates in Mumbai and Shanghai, and initiation of military-to-military contacts.

The 1993 Border Peace and Tranquillity Agreement (BPTA)

- Finalised during P.V. Narasimha Rao's September 1993 Beijing visit, it was the first formal agreement to maintain peace on the LAC.
- It called for reduction of forces, avoidance of escalation, and establishment of flag-meeting points between military commanders (e.g., Bum La in Arunachal, Chushul in Ladakh).
- It created a framework for confidence-building

Reasons for Continued Indeterminacy

- **Ambiguity of the LAC:** China side has not exchanged official maps of all sectors, leading to overlapping perceptions.
- **Strategic Calculations:** China prefers ambiguity as it provides leverage during negotiations and military stand-offs.
- **Trust Deficit:** Incidents like Depsang (2013), Doklam (2017), and Galwan (2020) have eroded confidence despite agreements.
- **Asymmetry of Power:** China's rise as a global power has hardened its bargaining position, while India insists on clarity first.

Way Forward

- Mutual recognition of ground realities through exchange of maps and clarification of the LAC.
- Strengthening of military communication channels and border

	<p>trade to deepen interdependence.</p> <ul style="list-style-type: none"> • Linking boundary talks with broader economic and strategic cooperation to build incentives for peace.
Conclusion	<p>The India-China border remains undefined not due to lack of dialogue but because of deliberate ambiguity and mistrust. The 1993 BPTA was a milestone, yet peace is fragile as long as the LAC remains a matter of “perceptions.” A durable solution will require political will, mutual concessions, and an understanding that stability on the border is foundational to Asian peace and prosperity.</p>

Q10. The recent hike in H-1B visa fees in the United States has raised concerns for Indian IT professionals and the broader India-U.S. technology partnership. Discuss the implications of this policy for India. Suggest a way forward. (15 marks, 250 words)

Topic – Recent hike in H-1B visa fees in the US

Source: The Hindu

<https://www.thehindu.com/opinion/editorial/h-1b-maybe-on-donald-trump-and-the-h-1b-visa-fees-hike/article70077214.ece>

Introduction	<p>The H-1B visa, under the U.S. Immigration and Nationality Act (INA), enables foreign skilled workers to be employed in specialty occupations. Indian professionals constitute nearly 71% of all H-1B visas, making India the most impacted by the recent hike of application fees to \$100,000. This decision has significant economic, diplomatic, and humanitarian implications for India and the India–U.S. technology relationship.</p>
Body	<ul style="list-style-type: none"> • Background and Policy Context • Bilateral Dimension • Implications for India • Challenges • Way Forward
Conclusion	<p>The H-1B visa fee hike demonstrates India’s vulnerability to external policy shocks. While dialogue with the U.S. must continue, India’s long-term resilience lies in domestic capacity building, innovation-driven growth, and market diversification. By turning this challenge into an opportunity, India can emerge as a self-reliant digital leader with reduced dependency on foreign markets.</p>

UPSC Syllabus	India-US Relations
Why was this	Q. Indian diaspora has scaled new heights in the West. Describe its

question asked?	economic and political benefits for India. [2023]
Introduction	<p>The H-1B visa, under the U.S. Immigration and Nationality Act (INA), enables foreign skilled workers to be employed in specialty occupations. Indian professionals constitute nearly 71% of all H-1B visas, making India the most impacted by the recent hike of application fees to \$100,000. This decision has significant economic, diplomatic, and humanitarian implications for India and the India–U.S. technology relationship.</p>
Body	<p>Background and Policy Context</p> <ul style="list-style-type: none">• The U.S. INA caps H-1B visas at 85,000 annually, with allocation handled by the U.S. Citizenship and Immigration Services (USCIS) lottery system.• The new visa fee hike has been justified as a protectionist policy to discourage outsourcing and foreign recruitment.• India supports its IT sector through the Information Technology Act, 2000, the Digital India Mission, and the National Software Policy, 2019.• India has previously challenged U.S. visa restrictions at the World Trade Organization (WTO) under the General Agreement on Trade in Services (GATS) framework. <p>Bilateral Dimension</p> <ul style="list-style-type: none">• India’s influence is limited because immigration policy remains an internal matter of the U.S. government.• The policy change risks straining technology cooperation within the India–U.S. Trade Policy Forum and the Strategic Trade Dialogue. <p>Implications for India</p> <ul style="list-style-type: none">• Indian IT firms such as Infosys, TCS, and Wipro will face significantly higher operational costs.• India’s \$125 billion annual remittance inflows could shrink as fewer professionals secure U.S. jobs.• Families of H-1B workers will face uncertainty regarding migration, settlement, and education of children. <p>Challenges</p> <ul style="list-style-type: none">• There is a growing wave of protectionism in the West driven by domestic politics.• India has limited diplomatic leverage in altering U.S. immigration law.• India’s domestic innovation ecosystem remains weak, with R&D spending only around 0.7% of GDP.

	<p>Way Forward</p> <ul style="list-style-type: none"> • India must diversify its IT export markets towards Europe, East Asia, and Africa to reduce reliance on the U.S. • India should strengthen its domestic innovation ecosystem by promoting the AI Mission 2023, Skill India Mission, and R&D. • India needs to engage diplomatically through IPEF, Quad, and WTO forums to highlight the benefits of talent mobility. • The Indian workforce should be reskilled in AI, cybersecurity, and biotechnology to remain competitive in global markets. • India should create incentives for return migration, encouraging skilled professionals abroad to contribute at home.
<p>Conclusion</p>	<p>The H-1B visa fee hike demonstrates India’s vulnerability to external policy shocks. While dialogue with the U.S. must continue, India’s long-term resilience lies in domestic capacity building, innovation-driven growth, and market diversification. By turning this challenge into an opportunity, India can emerge as a self-reliant digital leader with reduced dependency on foreign markets.</p>

Q11. Discuss the historical, economic, technological, and strategic dimensions of India-Mauritius relations in light of the recent Enhanced Strategic Partnership, the USD 680 million economic package, and India’s Vision MAHASAGAR policy. (15 marks, 250 words)

Topic – State visit of Mauritian PM to India

Source: The Hindu

<https://www.thehindu.com/news/national/mauritius-ramgoolam-pm-modi-talks-varanasi-september-11-2025/article70036993.ece>

<p>Introduction</p>	<p>India and Mauritius enjoy a unique partnership based on shared history, civilizational bonds, and strategic geography. During the September 2025 state visit of Mauritian PM Dr. Navinchandra Ramgoolam, hosted by PM Modi in Varanasi, ties were deepened through a USD 680 million special economic package. This comes after the March 2025 decision to elevate ties to an Enhanced Strategic Partnership under India’s Vision MAHASAGAR (Mutual and Holistic Advancement for Security and Growth Across Regions). The partnership blends cultural kinship with strategic cooperation, positioning Mauritius as a vital pillar in India’s Indian Ocean strategy.</p>
<p>Body</p>	<ul style="list-style-type: none"> • Historical and Civilizational Foundations • Strategic and Maritime Cooperation • Economic Package: Infrastructure, Health, Connectivity

	<ul style="list-style-type: none"> • Trade and Technology Cooperation • Balancing China and Strengthening Global South Outreach
Conclusion	<p>India–Mauritius ties exemplify “shared dreams and a shared destiny.” The USD 680 million package, enhanced trade-tech agreements, and maritime security cooperation reflect India’s multidimensional approach — blending culture, commerce, and strategy. Under Enhanced Strategic Partnership and Vision MAHASAGAR, Mauritius is both a gateway to Africa and a linchpin in India’s Indian Ocean strategy. Strengthening this “family bond” ensures resilience against external pressures, balances China’s influence, and consolidates India’s role as a leader of the Global South.</p>

UPSC Syllabus	India-Mauritius Relations
Why was this question asked?	Q. Increasing interest of India in Africa has its pro and cons. Critically Examine. [2014]
Introduction	<p>India and Mauritius enjoy a unique partnership based on shared history, civilizational bonds, and strategic geography. During the September 2025 state visit of Mauritian PM Dr. Navinchandra Ramgoolam, hosted by PM Modi in Varanasi, ties were deepened through a USD 680 million special economic package. This comes after the March 2025 decision to elevate ties to an Enhanced Strategic Partnership under India’s Vision MAHASAGAR (Mutual and Holistic Advancement for Security and Growth Across Regions). The partnership blends cultural kinship with strategic cooperation, positioning Mauritius as a vital pillar in India’s Indian Ocean strategy.</p>
Body	<p>Historical and Civilizational Foundations</p> <ul style="list-style-type: none"> • Large Indian diaspora (≈ two-thirds of Mauritius’ population) sustains enduring linguistic, cultural, and religious links. • Shared colonial experiences foster trust and solidarity in global forums. • India supported Mauritius in education, cultural preservation, and democratic institution building since independence. • Varanasi, where PM Modi hosted his counterpart, symbolises spiritual and cultural union. <p>Strategic and Maritime Cooperation</p> <ul style="list-style-type: none"> • Mauritius’ location near key sea lanes gives it geopolitical weight in the Indian Ocean. • India provides naval patrols, radar systems, and hydrographic

cooperation (EEZ mapping, navigation charts, surveys).

- Support for the Mauritian Coast Guard, including helicopters and modern equipment, reinforces India's role as a **net security provider**.
- *Chagos Archipelago milestone*: India congratulated Mauritius on regaining sovereignty in 2025; New Delhi consistently backed Port Louis against colonial detachment by Britain.

Economic Package: Infrastructure, Health, Connectivity

The **USD 680 million package** covers multiple sectors:

- **Healthcare (USD 215M grants)**: 500-bed Sir Seewoosagur Ramgoolam Hospital, AYUSH Centre of Excellence, Veterinary School & Animal Hospital.
- **Infrastructure (USD 440M grant-cum-LoC)**: ATC Tower at SSR Airport, M4 Motorway, Ring Road Phase II, modern port equipment.
- **Energy transition**: 17.5 MW floating solar project at Tamarind Falls.
- **Emergency & security**: provision of helicopters, modernised port facilities.
- USD 25M direct budgetary support this fiscal year.

This comprehensive package reflects India's emphasis on **inclusive development plus strategic infrastructure**.

Trade and Technology Cooperation

- Local currency trade settlement reduces dependence on the US dollar.
- Expansion in **ICT, fintech, digital public infrastructure, cybersecurity, e-governance**.
- Collaboration in renewable energy and skill development for Mauritius' transition into a knowledge economy.
- Mauritius serves as a hub for Indian pharma, textiles, and tourism investments in Africa.

Balancing China and Strengthening Global South Outreach

- China's BRI investments in Indian Ocean islands (ports, bases) heighten strategic competition.
- India's sustainable, trust-based packages counterbalance Chinese influence.
- Mauritius, unlike some other island states, has remained firmly aligned with India due to diaspora and historic trust.
- Both countries coordinate at **UN, IORA, Commonwealth, and G-77**, amplifying Global South priorities: climate action, debt

	relief, and equitable trade.
Conclusion	India–Mauritius ties exemplify “shared dreams and a shared destiny.” The USD 680 million package, enhanced trade-tech agreements, and maritime security cooperation reflect India’s multidimensional approach — blending culture, commerce, and strategy. Under Enhanced Strategic Partnership and Vision MAHASAGAR, Mauritius is both a gateway to Africa and a linchpin in India’s Indian Ocean strategy. Strengthening this “family bond” ensures resilience against external pressures, balances China’s influence, and consolidates India’s role as a leader of the Global South.

Q12. Critically examine the evolution and current trajectory of India-Singapore relations, with reference to their historical context, recent trade, political, and strategic developments, including Singapore’s support for India’s patrolling of the Malacca Strait. (15 marks, 250 words)

Topic – Current trajectory of India-Singapore Relations

Source: The Hindu

<https://www.thehindu.com/news/national/india-singapore-relations-go-far-beyond-diplomacy-pm-modi/article70011429.ece>

Introduction	The multifaceted India-Singapore relationship has evolved from shared colonial legacies and cultural bonds to become a robust partnership in trade, strategic security, and technological innovation. Recent dialogues and bilateral agreements signify an expanded cooperation, especially as both nations adapt to the emerging Indo-Pacific security dynamics and technological advancements.
Body	<ul style="list-style-type: none"> • Historical Background • Trade and Economic Relations • Political and Multilateral Engagement • Strategic and Defence Cooperation • Contemporary Challenges and Way Forward
Conclusion	India-Singapore ties exemplify a successful transformation from historical comradeship to a modern, forward-looking partnership characterized by vibrant trade, credible strategic convergence, and technological collaboration. Singapore’s support for India’s patrolling in the Malacca Strait marks a new era in bilateral and regional security cooperation, setting the stage for deeper engagement in the Indo-Pacific.
UPSC Syllabus	India- Singapore Relations

Why was this question asked?

Q. China is using its economic relations and positive trade surplus as tools to develop potential military power status in Asia', In the light of this statement, discuss its impact on India as her neighbour. [2017]

Introduction

The multifaceted India-Singapore relationship has evolved from shared colonial legacies and cultural bonds to become a robust partnership in trade, strategic security, and technological innovation. Recent dialogues and bilateral agreements signify an expanded cooperation, especially as both nations adapt to the emerging Indo-Pacific security dynamics and technological advancements.

Body

Historical Background

- India and Singapore share deep-rooted historical ties, shaped by the influence of the Indian diaspora and common colonial past under the British Empire.
- Diplomatic relations were formally established in 1965 after Singapore gained independence, with regular high-level exchanges since then.
- The post-Cold War era saw a significant upswing, marked by Singapore's proactive support for India's economic reforms in the 1990s and early 2000s.

Trade and Economic Relations

- Singapore is consistently among India's top trading partners in ASEAN and a leading source of Foreign Direct Investment (FDI) into India.
- **Key agreements and areas:**
 - Comprehensive Economic Cooperation Agreement (CECA), in force since 2005, driving investment, services, and business movement.
 - Recent MoUs include green and digital shipping corridors, civil aviation R&D, digital asset innovation, and a national centre for advanced manufacturing in Chennai.
 - As of 2025, semiconductor policy dialogues confirm Singapore's interest in supporting India's ambitions for technology manufacturing and design.

Political and Multilateral Engagement

- India and Singapore maintain strong political ties with regular summits, strategic dialogues, and coordination in global fora (e.g., FATF, WTO, United Nations).
- Both sides reaffirmed cooperation against cross-border terrorism and signalled intentions to collaborate bilaterally and

multilaterally to address global challenges.

- Visits by heads of state and government, most recently Singapore PM Lawrence Wong's visit to India in September 2025, reinforce political trust and an evolving partnership.

Strategic and Defence Cooperation

- The strategic element of the relationship has deepened, focusing on defence technology cooperation in “quantum computing, AI, automation, and unmanned vessels” and collaborative initiatives in maritime security.
- Singapore's endorsement of India's plan to patrol the Malacca Strait underlines mutual recognition of shared security interests in a crucial maritime chokepoint.
- India's possible inclusion in the Malacca Straits Patrol, currently coordinated among Malaysia, Indonesia, Thailand, and Singapore, would enhance regional synergy and security.

Contemporary Challenges and Way Forward

- Both countries face challenges in balancing great-power rivalries in the Indo-Pacific, ensuring balanced trade, and adapting to technological disruptions.
- Sustained focus on innovation (semiconductors, AI), environmental collaboration (green shipping; urban water management), and capacity-building (advanced manufacturing skills, MRO in aviation) promise to cement this partnership for the future.
- Effective coordination in regional security initiatives will be crucial as India seeks a more significant strategic role in Southeast Asia.

Conclusion

India-Singapore ties exemplify a successful transformation from historical comradeship to a modern, forward-looking partnership characterized by vibrant trade, credible strategic convergence, and technological collaboration. Singapore's support for India's patrolling in the Malacca Strait marks a new era in bilateral and regional security cooperation, setting the stage for deeper engagement in the Indo-Pacific.

Q13. “South-South and Triangular Cooperation (SSTC) is more than a diplomatic phrase; it is a pathway to a more equitable and sustainable future.” Discuss the significance of SSTC in contemporary global development and critically evaluate India's role in strengthening this framework. (15 marks, 250 words)

Topic – South-South cooperation

Source: The Hindu

<https://www.thehindu.com/opinion/op-ed/sstc-is-more-than-a-diplomatic->

[phrase/article70109816.ece](https://www.insightsias.com/phrase/article70109816.ece)

Introduction	South-South and Triangular Cooperation (SSTC) represents a paradigm shift in international development. Unlike the traditional North-South aid model characterised by donor–recipient hierarchies, SSTC is anchored in solidarity, equality, and mutual benefit. Its institutional foundation lies in the 1978 Buenos Aires Plan of Action (BAPA), which emphasised technical cooperation among developing nations. In the present context of geopolitical tensions, shrinking development assistance, and uneven progress on the 2030 Sustainable Development Goals (SDGs), SSTC offers a credible pathway by promoting context-sensitive, cost-effective, and scalable solutions among nations of the Global South.
Body	<ul style="list-style-type: none"> • Evolution and Significance of SSTC • India’s Institutional and Programmatic Role • Innovations and Sectoral Contributions • Triangular Cooperation and Global Synergies • Challenges to Effective SSTC • Way Forward
Conclusion	South-South and Triangular Cooperation has moved beyond diplomatic symbolism to become a strategic instrument for equitable development. For developing countries, it bridges gaps left by the faltering North-South aid system while nurturing collective self-reliance. India, guided by the ethos of Vasudhaiva Kutumbakam, has emerged as a leading architect of SSTC through innovations in food security, digital governance, and climate resilience. To sustain momentum, India must combine political leadership with financial innovation, institutional capacity, and inclusive partnerships, positioning SSTC as a genuine pathway to a more sustainable and just global order.

UPSC Syllabus	South-South cooperation
Why was this question asked?	Q. “The broader aims and objectives of WTO are to manage and promote international trade in the era of globalization. But the Doha round of negotiations seem doomed due to differences between the developed and the developing countries.” Discuss in the Indian perspective. [2016]
Introduction	South-South and Triangular Cooperation (SSTC) represents a paradigm shift in international development. Unlike the traditional North-South aid model characterised by donor–recipient hierarchies, SSTC is anchored in solidarity, equality, and mutual benefit. Its institutional foundation lies in the 1978 Buenos Aires Plan of Action (BAPA), which emphasised technical cooperation among developing nations. In the

present context of geopolitical tensions, shrinking development assistance, and uneven progress on the 2030 Sustainable Development Goals (SDGs), SSTC offers a credible pathway by promoting context-sensitive, cost-effective, and scalable solutions among nations of the Global South.

Body

Evolution and Significance of SSTC

- The trajectory of SSTC reflects both historical necessity and contemporary relevance. During the Cold War, newly decolonised states sought to **reduce dependence on the West** by building frameworks of mutual cooperation through the **Non-Aligned Movement and Group of 77**. Over the decades, SSTC evolved into a recognised UN framework — celebrated annually on September 12, marking the adoption of BAPA. Its significance lies in:
- **Replication of success stories:** e.g., agricultural innovations in Brazil or digital public goods in India adapted in Africa.
- **Cost-effectiveness:** Peer-to-peer exchange minimises transaction costs compared to expensive donor-led projects.
- **Equity and sovereignty:** Developing nations cooperate on their own terms, avoiding conditionalities tied to traditional aid.
- **Relevance for SDGs:** SSTC directly supports goals like Zero Hunger (SDG 2), Quality Education (SDG 4), and Climate Action (SDG 13).

India's Institutional and Programmatic Role

- **Development Partnership Administration (2012):** Manages India's grant and concessional credit portfolio in 160+ countries.
- **Indian Technical and Economic Cooperation (ITEC):** Trained over **200,000 professionals from 160 countries**.
- **India-UN Development Partnership Fund (2017):** Supported **75 projects in 56 countries**, especially LDCs and SIDS.
- **Voice of the Global South Summit (2023, 2024):** Platform to consolidate Global South priorities in global governance.

Innovations and Sectoral Contributions

- **Digital public infrastructure:** India's Aadhaar and UPI replicated in countries like Mauritius and Nepal.
- **Food security:** Rice fortification programme and *Annapurta (Grain ATM)* co-developed with the World Food Programme (WFP).
- **Health cooperation:** Vaccine Maitri supplied over **200 million doses of COVID-19 vaccines** to Global South partners.
- **Climate resilience:** International Solar Alliance (ISA) and

Coalition for Disaster Resilient Infrastructure (CDRI) as global public goods.

Triangular Cooperation and Global Synergies

- **India-WFP:** Piloted Take-Home Ration model in India, later scaled in Africa and South-East Asia.
- **India–Japan–Africa Trilateral Cooperation:** Infrastructure projects in Kenya and Mozambique.
- **UN mechanisms:** Contribution to the UN Fund for South-South Cooperation, which supported projects in 70+ countries.
- **Regional outreach:** Financing supply-chain optimisation in Nepal and nutrition projects in Laos under triangular partnerships.

Challenges to Effective SSTC

- **Financing constraints:** India's development assistance (~\$1.5–2 billion annually) is modest compared to OECD donors.
- **Implementation bottlenecks:** Delays in project delivery and monitoring in Africa and Pacific Island nations.
- **Geopolitical competition:** China's Belt and Road Initiative often overshadows India's low-cost but smaller-scale projects.
- **Limited private sector integration:** Under-utilisation of Indian corporates in SSTC-led initiatives.

Way Forward

- **Dedicated SSTC financing mechanisms** with wider private-sector contributions.
- **Knowledge platforms** for scaling digital, agricultural, and health innovations across the South.
- **Stronger accountability and evaluation** to ensure transparency in aid delivery.
- **Deepening triangular cooperation** with EU, Japan, and UN agencies to pool resources and expand reach.

Conclusion

South-South and Triangular Cooperation has moved beyond diplomatic symbolism to become a strategic instrument for equitable development. For developing countries, it bridges gaps left by the faltering North-South aid system while nurturing collective self-reliance. India, guided by the ethos of Vasudhaiva Kutumbakam, has emerged as a leading architect of SSTC through innovations in food security, digital governance, and climate resilience. To sustain momentum, India must combine political leadership with financial innovation, institutional capacity, and inclusive partnerships, positioning SSTC as a genuine pathway to a more sustainable and just global order.

Health

Q14. Despite decades of efforts, Aedes-borne viral diseases continue to challenge India's public health. Critically examine why conventional strategies are insufficient and suggest revised approaches combining top-down and community-based measures (15 marks, 250 words)

Topic – Aedes-borne viral diseases

Source: The Hindu

<https://www.thehindu.com/sci-tech/health/clearing-the-fog-a-need-for-revised-strategies-against-aedes-mosquitoes/article70025123.ece>

Introduction	Aedes mosquitoes, which spread dengue, chikungunya, and Zika, are now a major urban health threat in India. Conventional fogging and chemical sprays are proving ineffective, while new innovations are promising but costly. Hence, a combined top-down and bottom-up strategy is needed to control this challenge.
Body	<ul style="list-style-type: none"> • Key Facts About Aedes Mosquitoes • Why Conventional Strategies Fail • Top-Down Scientific Measures • Personal Protection Measures • Community Mobilisation • Systemic Gaps and Needed Solutions
Conclusion	India needs a hybrid strategy: top-down innovations (Wolbachia, emanators, vaccines) combined with bottom-up mobilisation (community clean-up, repellents, clothing). Strengthening public health education, ensuring availability of proven repellents, and reducing plastic-driven stagnation are vital to “clear the fog” of outdated practices. Such integrated strategies can create 100–200 metre “safe zones,” reducing Aedes-borne viral diseases sustainably.

UPSC Syllabus	Viral diseases
Why was this question asked?	Q. COVID-19 pandemic has caused unprecedented devastation worldwide. However, technological advancements are being availed readily to win over the crisis. Give an account of how technology was sought to aid management of the pandemic. (2020)
Introduction	Aedes mosquitoes, which spread dengue, chikungunya, and Zika, are now a major urban health threat in India. Conventional fogging and

chemical sprays are proving ineffective, while new innovations are promising but costly. Hence, a combined top-down and bottom-up strategy is needed to control this challenge.

Body

Key Facts About Aedes Mosquitoes

- Habitat: Breed in clean stagnant water found in tyres, coconut shells, bottles, and air coolers.
- Feeding habits: Unlike malaria mosquitoes, Aedes bite during the day and indoors under artificial light.
- Range: Limited flight range (100–200 metres), making local action highly effective.
- Adaptability: Show increasing resistance to insecticides and ability to thrive in densely populated urban areas.
- Public health impact: Cause major productivity losses and strain on healthcare systems due to recurring outbreaks.

Why Conventional Strategies Fail

- Outdoor fumigation is ineffective because Aedes mosquitoes feed indoors and are active during the day.
- Mosquito nets and vaporizers are of limited use since Aedes are day-biting and have developed resistance to pyrethroid chemicals.
- The larvicide temephos has lost effectiveness due to resistance and gives users a false sense of security, worsening outbreaks.
- Natural oils like citronella or neem provide only 1–2 hours of protection and cause skin irritation in high concentrations.

Top-Down Scientific Measures

- Wolbachia mosquito release programmes block virus transmission and are successful in 15 countries, but high costs and regulatory gaps limit adoption in India.
- Spatial emanators such as transfluthrin-coated sheets or mats provide 15 days of continuous protection and reduced Aedes-borne infections by 34% in Peru trials.
- Dengue vaccines are under trial, but there is no protection yet against Zika and chikungunya.
- The Government of India's 2017 monograph India Fights Dengue provides guidelines for larval source reduction.
- Delhi's "Rule of 10" campaign (10 minutes every Sunday for 10 weeks) demonstrated how structured community action can be scaled nationally.

Personal Protection Measures

- WHO-approved repellents such as DEET (20%), picaridin,

IR3535, and 2-undecanone are safe for children, pregnant women, and breastfeeding mothers.

- Wearing loose, full-body clothing during the peak transmission season (September–November) provides effective physical protection.
- Consumer awareness campaigns are needed to counter misinformation about DEET and make proven repellents widely available in Indian markets.

Community Mobilisation

- The Camino Verde study in Latin America showed that community-led clean-up drives reduced dengue infections by 29%.
- A Chennai-based study demonstrated that using effective lids on water containers reduced the presence of larvae by 94%.
- ASHA workers can play a central role in spreading awareness and encouraging preventive household practices.
- Community action should include cleaning and covering indoor and outdoor water containers, removing tyres, plastic bottles, coconut shells, and cleaning air coolers.
- Plastic pollution is directly linked to higher mosquito breeding and must be tackled through regular waste collection and better urban flood management.

Systemic Gaps and Needed Solutions

- Poor urban waste management creates stagnant water that becomes breeding grounds for Aedes mosquitoes.
- Proven repellents such as DEET and picaridin are not easily available in India due to misinformation and weak distribution.
- Municipal corporations rely too much on fogging, which should only be used during outbreaks, while prevention should remain the primary focus.

Conclusion

India needs a hybrid strategy: top-down innovations (Wolbachia, emanators, vaccines) combined with bottom-up mobilisation (community clean-up, repellents, clothing). Strengthening public health education, ensuring availability of proven repellents, and reducing plastic-driven stagnation are vital to “clear the fog” of outdated practices. Such integrated strategies can create 100–200 metre “safe zones,” reducing Aedes-borne viral diseases sustainably.

Q 15. CEREBO, a novel diagnostic device for traumatic brain injuries, represents an important step in bridging healthcare gaps in India. Discuss its significance with reference to public health, technology, and rural accessibility. (15 marks, 250 words)

Topic – Challenges to public health in India

Source: The Hindu

<https://www.thehindu.com/sci-tech/health/what-is-cerebo-explained/article70001314.ece>

Introduction	Traumatic Brain Injuries (TBIs) are a major public health concern in India, with 1.5–2 million cases reported annually and nearly one million deaths. Access to diagnostic facilities like CT and MRI scans is limited outside urban areas due to costs and infrastructure deficits. To address this, CEREBO, a portable, hand-held, non-invasive brain injury diagnostic tool developed collaboratively by ICMR, AIIMS Bhopal, NIMHANS Bengaluru, and Bioscan Research, has been introduced as a path-breaking innovation to strengthen India’s emergency healthcare system.
Body	<ul style="list-style-type: none"> • Technological Features of CEREBO • Public Health Significance • Rural and Emergency Care Utility • Economic and Systemic Benefits • Global and Strategic Dimensions • Implications for India
Conclusion	CEREBO represents a convergence of technology, public health need, and accessibility. By providing early, safe, and cost-effective detection of traumatic brain injuries, it addresses both the high incidence of TBIs and the inequitable distribution of diagnostic infrastructure. With systematic deployment, paramedic training, and integration into national health schemes, CEREBO can revolutionise emergency healthcare in India and emerge as a global model of inclusive medical innovation.

UPSC Syllabus	Challenges to public health in India
Why was this question asked?	Q. What do you understand by the term ‘Multi-Drug Resistant Tuberculosis’ (MDR-TB)? What measures would you advocate for its containment and what are the implications of its spread in the community? (2012)
Introduction	Traumatic Brain Injuries (TBIs) are a major public health concern in India, with 1.5–2 million cases reported annually and nearly one million deaths. Access to diagnostic facilities like CT and MRI scans is limited outside urban areas due to costs and infrastructure deficits. To address

this, CEREBO, a portable, hand-held, non-invasive brain injury diagnostic tool developed collaboratively by ICMR, AIIMS Bhopal, NIMHANS Bengaluru, and Bioscan Research, has been introduced as a path-breaking innovation to strengthen India's emergency healthcare system.

Body

Technological Features of CEREBO

- CEREBO works on **near-infrared spectroscopy combined with machine learning algorithms**.
- It provides **radiation-free, colour-coded results within a minute**, enhancing speed and safety.
- The device can detect **intracranial bleeding and brain edema** quickly and reliably.
- It is **safe for infants and pregnant women**.

Public Health Significance

- TBIs are a **leading cause of mortality, morbidity, and disability** in India.
- Major causes include **road traffic accidents (60%), falls (20–25%), and violence (around 10%)**.
- Early detection prevents complications such as **permanent neurological damage or death**.
- CEREBO improves **time-to-treatment during the golden hour**, saving lives in emergency situations.

Rural and Emergency Care Utility

- Rural areas often **lack CT and MRI facilities**, making diagnosis difficult.
- CEREBO's **hand-held and portable design** allows use in **ambulances, primary health centres, trauma units, and disaster zones**.
- Its operation by non-specialist health workers ensures **timely triage and referral decisions**.
- It reduces delays in shifting patients to tertiary hospitals, particularly in remote and underserved areas.

Economic and Systemic Benefits

- CEREBO offers a **cost-effective alternative to expensive imaging methods**.
- It helps to **screen and triage patients**, thereby reducing unnecessary CT scan referrals.
- This reduces **congestion at tertiary hospitals** and optimises scarce medical resources.

Global and Strategic Dimensions

	<ul style="list-style-type: none">• Validation studies suggest potential use in military healthcare and disaster medicine.• Its low-cost and indigenous nature makes it suitable for global deployment in developing countries.• CEREBO strengthens India's reputation as a leader in affordable healthcare innovation, particularly for the Global South. <p>Implications for India</p> <ul style="list-style-type: none">• Health Equity: Expands access to quality diagnostics for rural and marginalised populations.• National Health Goals: Supports India's push towards universal health coverage under the National Health Policy.• Research & Innovation: Encourages indigenous R&D and aligns with the Atmanirbhar Bharat initiative.• Socio-economic Impact: Reduces disability-adjusted life years (DALYs) and productivity losses caused by TBIs.
Conclusion	CEREBO represents a convergence of technology, public health need, and accessibility. By providing early, safe, and cost-effective detection of traumatic brain injuries, it addresses both the high incidence of TBIs and the inequitable distribution of diagnostic infrastructure. With systematic deployment, paramedic training, and integration into national health schemes, CEREBO can revolutionise emergency healthcare in India and emerge as a global model of inclusive medical innovation.

Q 16. Mapping cancer burden in India is the first step towards making data more robust and enabling targeted interventions. Discuss the importance of cancer registries in this context and suggest policy measures to strengthen cancer surveillance in the country. (15 marks, 250 words)

Topic – Cancer control in India

Source: The Indian Express

<https://indianexpress.com/article/opinion/editorials/express-view-on-mapping-cancer-first-step-towards-making-data-on-disease-more-robust>

Introduction	Cancer has emerged as a major non-communicable disease (NCD) challenge in India, contributing significantly to morbidity and mortality. According to the Global Cancer Observatory (2022), India ranks third highest in cancer cases globally, with a mortality-to-incidence ratio of 64.47%, the highest among the top 10 high-burden countries. Despite cancer being part of India's healthcare programmes for over five
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	decades, robust mapping of its incidence remains limited due to fragmented data collection. The recent analysis of ICMR Cancer Registries (2025) underlines the urgency of comprehensive, region-wise, and population-specific cancer mapping for effective policy interventions.
Body	<ul style="list-style-type: none"> • Significance of Mapping Cancer Data • Limitations of Current Cancer Registries • Insights from Current Registry Study • Policy Framework for Strengthening Cancer Surveillance • Way Forward: Towards Robust Cancer Data & Care
Conclusion	Mapping cancer through robust registries is not merely a statistical exercise but a public health imperative. Comprehensive, region-specific and gender-sensitive cancer data can transform India's fragmented cancer response into a targeted, efficient, and equitable care system. Expanding registry coverage, mandating reporting obligations, and leveraging digital health platforms will help bridge the current gaps and contribute significantly to reducing cancer mortality in India. Thus, cancer mapping must be placed at the core of India's NCD strategy to achieve universal health coverage and improve survival outcomes.

UPSC Syllabus	Non-Communicable diseases in India
Why was this question asked?	Q. Why is there so much activity in the field of biotechnology in our country? How has this activity benefitted the field of biopharma? [2018]
Introduction	Cancer has emerged as a major non-communicable disease (NCD) challenge in India, contributing significantly to morbidity and mortality. According to the Global Cancer Observatory (2022), India ranks third highest in cancer cases globally, with a mortality-to-incidence ratio of 64.47%, the highest among the top 10 high-burden countries. Despite cancer being part of India's healthcare programmes for over five decades, robust mapping of its incidence remains limited due to fragmented data collection. The recent analysis of ICMR Cancer Registries (2025) underlines the urgency of comprehensive, region-wise, and population-specific cancer mapping for effective policy interventions.
Body	<p>Significance of Mapping Cancer Data</p> <ul style="list-style-type: none"> • Provides accurate incidence and mortality rates across states, genders, and social groups. • Helps identify high-risk regions and populations, e.g., high

prevalence of oral cancer in Northeast India.

- Enables tracking of **preventable causes** such as tobacco and dietary habits.
- Facilitates **resource allocation** in infrastructure, manpower, and screening programmes.
- Supports **research and innovation** in early diagnosis, treatment protocols, and genomic studies.

Limitations of Current Cancer Registries

- ICMR registries cover **less than 20%** of the Indian population.
- Reporting is **voluntary**, unlike tuberculosis where data sharing is mandatory under the Epidemic Diseases framework.
- Major states like **Uttar Pradesh, Maharashtra, and Bihar** lack reporting obligations.
- Late diagnosis remains a challenge — cancers like **oral, lung, stomach** often fall off the data radar.
- Lack of **uniform digital health infrastructure** leads to fragmented data entry and under-reporting.

Insights from Current Registry Study

- **Gender disparity:** Women account for 51% of cases — higher than global average, due to breast and cervical cancers being better detectable.
- **Regional variation:** Mizoram reports highest lifetime cancer risk (21% men, 19% women), much higher than national average (11%).
- **Mortality patterns:** Women have better survival as breast/cervical cancers are detected early, but **men suffer from late-detected oral/lung cancers**.
- **Policy implication:** Highlights urgent need for **region-specific awareness and screening**, especially in high-risk states/communities.

Policy Framework for Strengthening Cancer Surveillance

- **Legal mandate:** Make cancer-data reporting compulsory across states, aligning with practice for infectious diseases.
- **Strengthen ICMR registry network** by integrating it with **National Digital Health Mission (NDHM)** for seamless data transfer.
- Establish **region-specific screening programmes** (e.g., oral cancer in the Northeast, cervical cancer in northern states).
- Promote **public-private partnerships** in cancer reporting, treatment, and genomic research.
- Scale-up affordable diagnostic tools under **Ayushman Bharat**

	<p>and National Programme for Prevention and Control of Cancer, Diabetes, Cardiovascular Diseases and Stroke (NPCDCS).</p> <p>Way Forward: Towards Robust Cancer Data & Care</p> <ul style="list-style-type: none">• Expand registry coverage to 100% of districts within next decade.• Promote AI-based real-time cancer surveillance systems.• Strengthen community awareness campaigns on lifestyle diseases, tobacco cessation, and vaccination (HPV for cervical cancer).• Institutionalise state cancer control boards for localised planning.• Learn from global best practices — e.g., mandatory cancer reporting in the US and Europe.
<p>Conclusion</p>	<p>Mapping cancer through robust registries is not merely a statistical exercise but a public health imperative. Comprehensive, region-specific and gender-sensitive cancer data can transform India's fragmented cancer response into a targeted, efficient, and equitable care system. Expanding registry coverage, mandating reporting obligations, and leveraging digital health platforms will help bridge the current gaps and contribute significantly to reducing cancer mortality in India. Thus, cancer mapping must be placed at the core of India's NCD strategy to achieve universal health coverage and improve survival outcomes.</p>

Social Justice

Q17. What are Particularly Vulnerable Tribal Groups (PVTGs), which the Government of India wants to be counted separately in the Census? Discuss their features, origin of the category, and the significance of separate enumeration. (15 marks, 250 words)

Topic – Particularly Vulnerable Tribal Groups (PVTGs) and Census

Source: The Indian Express

https://indianexpress.com/article/explained/particularly-vulnerable-tribal-groups-pvtg-census-10229611/?ref=explained_pg

<p>Introduction</p>	<p>The tribal population in India is highly diverse, with significant variations in socio-economic development across different communities. To address disparities among Scheduled Tribes (STs), the Dhebar Commission (1960–61) recommended the identification of the most vulnerable groups. This led to the creation of Particularly Vulnerable</p>
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	Tribal Groups (PVTGs), who require special attention in policy and development interventions. The Government of India now proposes to enumerate PVTGs separately in the Census to ensure accurate data for targeted welfare schemes.
Body	<ul style="list-style-type: none"> • Origin of the PVTG Category • Defining Features of PVTGs • Distribution and Demography • Rationale for Separate Census Enumeration • Challenges and Policy Implications
Conclusion	The identification of PVTGs reflects India's recognition of inequalities within Scheduled Tribes and the need for targeted interventions. Separate enumeration in the Census will provide accurate demographic and socio-economic data, strengthening the foundation for welfare policies. However, enumeration must be combined with updated identification criteria, protection of habitat rights, and empowerment-oriented development. This approach will ensure that PVTGs benefit from inclusive growth while retaining their cultural distinctiveness.

UPSC Syllabus	Welfare of vulnerable sections
Why was this question asked?	"Development and welfare schemes for the vulnerable, by its nature, are discriminatory in approach." Do you agree? Give reasons for your answer.
Introduction	The tribal population in India is highly diverse, with significant variations in socio-economic development across different communities. To address disparities among Scheduled Tribes (STs), the Dhebar Commission (1960–61) recommended the identification of the most vulnerable groups. This led to the creation of Particularly Vulnerable Tribal Groups (PVTGs), who require special attention in policy and development interventions. The Government of India now proposes to enumerate PVTGs separately in the Census to ensure accurate data for targeted welfare schemes.
Body	Origin of the PVTG Category <ul style="list-style-type: none"> • The category was created based on the recommendations of the Dhebar Commission (1960–61), which examined the conditions of Scheduled Tribes. • The Commission observed that certain tribal communities were more vulnerable than others due to extreme isolation and socio-economic disadvantages. • Initially, during the Fifth Five-Year Plan (1974–79), 52 groups

were identified as Primitive Tribal Groups.

- In 2006, the term “Primitive” was replaced by “Particularly Vulnerable” to avoid derogatory usage.
- Currently, 75 PVTGs have been identified across 18 states and one Union Territory (Andaman and Nicobar Islands).

Defining Features of PVTGs

- PVTGs are characterised by a stagnant or declining population, reflecting demographic vulnerability.
- They live in geographical isolation, often in remote forested, hilly, or inaccessible areas.
- Their economy is pre-agrarian, based on hunting, gathering, and shifting cultivation rather than settled agriculture.
- They display low literacy levels and limited access to modern education.
- Their economic condition is marked by subsistence living and lack of integration into the wider market economy.

Distribution and Demography

- PVTGs are spread across 18 states and the Andaman & Nicobar Islands.
- A recent survey conducted for the PM JANMAN scheme (2023) estimated the PVTG population at around 47.5 lakh.
- Madhya Pradesh has the highest estimated PVTG population at 13.22 lakh, followed by Maharashtra with 6.7 lakh and Andhra Pradesh with 5.18 lakh.
- Some groups are extremely small in number, such as the Sentinelese with only about 15 individuals.
- Others, like the Baigas of Madhya Pradesh, form relatively large communities, numbering over 4.1 lakh individuals.

Rationale for Separate Census Enumeration

- So far, PVTGs have been enumerated only under the broader Scheduled Tribe category, which has led to inadequate data.
- Separate enumeration will help in recording household-level and individual-level data for PVTGs.
- It will capture details about their livelihoods, demographic features, and cultural practices.
- It will ensure better targeting and effective implementation of schemes like the Pradhan Mantri Janjati Adivasi Nyay Maha Abhiyan (PM JANMAN).
- It will also allow policymakers to assess whether the criteria used for identifying PVTGs remain relevant in present

	<p>circumstances.</p> <p>Challenges and Policy Implications</p> <ul style="list-style-type: none"> • The criteria for identifying PVTGs, such as geographical isolation, have been questioned and need to be revisited. • Some communities may have improved socio-economic indicators, while others may have worsened, requiring reclassification. • PVTGs continue to face land alienation, displacement, and lack of recognition of habitat rights. • Separate enumeration alone will not solve their problems unless combined with participatory development strategies. • A balance is needed between providing modern welfare benefits and preserving their cultural autonomy.
<p>Conclusion</p>	<p>The identification of PVTGs reflects India’s recognition of inequalities within Scheduled Tribes and the need for targeted interventions. Separate enumeration in the Census will provide accurate demographic and socio-economic data, strengthening the foundation for welfare policies. However, enumeration must be combined with updated identification criteria, protection of habitat rights, and empowerment-oriented development. This approach will ensure that PVTGs benefit from inclusive growth while retaining their cultural distinctiveness.</p>

Q 18. “India’s changing fertility and aging trends, as highlighted in the SRS Statistical Report 2023, call for a policy reorientation. Discuss.” (15 marks, 250 words)

Topic – SRS Statistical Report 2023

Source: The Hindu

<https://www.thehindu.com/opinion/editorial/greying-with-grace-on-the-sample-registration-system-statistical-report/article70022062.ece>

<p>Introduction</p>	<p>India is entering a crucial demographic phase. The SRS Statistical Report 2023 shows the Crude Birth Rate (CBR) declining to 18.4 and the Total Fertility Rate (TFR) falling to 1.9, below the replacement level of 2.1. At the same time, the proportion of elderly (60+) has risen to 9.7%. These changes demand a shift in focus from population control to population management and welfare.</p>
<p>Body</p>	<ul style="list-style-type: none"> • Declining Fertility and Uneven Regional Trends • Demographic Dividend and Its Future • Towards Population Aging • National Population Policy and Policy Reorientation • Global Lessons and India’s Road Ahead

Conclusion	India stands at the intersection of youth and aging. While it continues to harness its demographic dividend, the growing elderly population requires a reoriented policy framework. By combining healthcare reforms, social security expansion, and workforce strategies, India can ensure that it truly “greys with grace,” safeguarding dignity for the elderly while sustaining economic vitality.
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UPSC Syllabus	Demographic dividend
Why was this question asked?	Q. “Demographic Dividend in India will remain only theoretical unless our manpower becomes more educated, aware, skilled and creative.” What measures have been taken by the government to enhance the capacity of our population to be more productive and employable? (2016)
Introduction	India is entering a crucial demographic phase. The SRS Statistical Report 2023 shows the Crude Birth Rate (CBR) declining to 18.4 and the Total Fertility Rate (TFR) falling to 1.9, below the replacement level of 2.1. At the same time, the proportion of elderly (60+) has risen to 9.7%. These changes demand a shift in focus from population control to population management and welfare.
Body	<p>Declining Fertility and Uneven Regional Trends</p> <ul style="list-style-type: none"> • The Total Fertility Rate (TFR) is the average number of children a woman is expected to bear during her lifetime. India’s TFR has fallen to 1.9. • A TFR of 2.1 is considered replacement level, meaning it is just enough to replace the population without long-term growth or decline. • India’s TFR at 1.9 therefore indicates that the country is moving towards population stabilization. • There are sharp regional contrasts: Bihar and Uttar Pradesh still record TFR above replacement level, while Delhi, Tamil Nadu, and West Bengal have dropped far below it. • This duality means some regions will face youth bulges and employment stress, while others may experience labour shortages and rapid aging. <p>Demographic Dividend and Its Future</p> <ul style="list-style-type: none"> • The demographic dividend refers to the economic growth potential that arises when the working-age population is larger than the dependent population (children and elderly). • India’s young workforce has been a source of the demographic dividend, with more workers than dependents driving growth in

recent decades.

- Falling fertility means this advantage may shrink soon, requiring urgent investments in education, skilling, and productivity to sustain growth.
- States with low fertility may face ageing-related labour shortages, while high-fertility states may continue to struggle with unemployment burdens.

Towards Population Aging

- India's demographic transition mirrors the **Demographic Transition Model (DTM)**, where declining fertility and mortality lead to stabilization but also aging.
- Kerala, with 15% elderly, reflects the demographic future awaiting the rest of India.
- The **dependency ratio** is changing: child dependency is falling, but old-age dependency is rising, shifting the burden of care to families and the state.
- Without adequate health, pension, and care systems, the elderly risk being marginalized socially and economically.

National Population Policy and Policy Reorientation

- The **National Population Policy (2000)** was framed with a focus on reducing fertility, universalizing contraception, and lowering maternal and infant mortality.
- With fertility at or below replacement in most states, India's policy must now reorient towards managing an aging population.
- Priorities should include:
 - Strengthening **geriatric health care** and chronic disease management within universal health coverage.
 - Expanding **pension, insurance, and social security coverage**, especially in rural areas.
 - Encouraging **productive aging**, where the elderly contribute through part-time, community, or knowledge-based roles.
 - Facilitating **inter-state migration frameworks** to redistribute labour across high- and low-fertility states.

Global Lessons and India's Road Ahead

- Countries like Japan and Italy show the perils of rapid aging without preparation — strained pensions, shrinking workforces, and rising healthcare costs.
- India still has a window of opportunity to prepare by:
 - Building a **care economy** and elderly-friendly

	<p>infrastructure.</p> <ul style="list-style-type: none"> ○ Investing in skill development to extend the working life of its population. ○ Leveraging technology such as telemedicine and e-health platforms for elderly care. <ul style="list-style-type: none"> ● Constitutional provisions such as Article 41 (public assistance in old age) and schemes like Ayushman Bharat and Indira Gandhi National Old Age Pension Scheme (IGNOAPS) form a base but require better implementation and funding.
Conclusion	<p>India stands at the intersection of youth and aging. While it continues to harness its demographic dividend, the growing elderly population requires a reoriented policy framework. By combining healthcare reforms, social security expansion, and workforce strategies, India can ensure that it truly “greys with grace,” safeguarding dignity for the elderly while sustaining economic vitality.</p>

Q19. Despite the creation of the Unique Disability ID (UDID) system, less than 40% of persons with disabilities (PwDs) in India have been issued ID cards required to access government benefits. Analyse the challenges in implementation and suggest measures to ensure inclusive and efficient delivery of entitlements. (15 marks, 250 words)

Topic – Welfare of persons with disabilities

Source: The Hindu

<https://www.thehindu.com/data/less-than-40-of-disabled-persons-in-india-have-the-id-needed-for-benefits/article70019908.ece>

Introduction	<p>India’s commitment to disability rights is enshrined in the Rights of Persons with Disabilities (RPwD) Act, 2016, which mandates equality, non-discrimination, and access to welfare. To operationalise this, the Union government introduced the Unique Disability ID (UDID) scheme in 2016 to create a centralised database and a single national identity for PwDs. However, data from the Department of Empowerment of Persons with Disabilities (DEPwD, 2025) shows that less than 40% of PwDs possess UDID cards, reflecting persistent barriers in welfare delivery.</p>
Body	<ul style="list-style-type: none"> ● Status and Regional Variation ● Key Challenges in Implementation ● Impact of Low UDID Coverage ● Policy Significance and Judicial Backing ● Way Forward: Towards Inclusive Implementation

Conclusion	The UDID scheme reflects a progressive vision of streamlining welfare delivery for PwDs, but its promise remains unrealised due to bureaucratic inertia, digital exclusion, and policy neglect. Moving forward, India must treat PwDs not merely as beneficiaries but as rights-holders, ensuring that identification systems do not become barriers to entitlements. A people-centric, technology-enabled, but accessibility-conscious approach is essential to make the UDID a true enabler of dignity, opportunity, and equality.
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UPSC Syllabus	Welfare of persons with disabilities
Why was this question asked?	Q. The Rights of Persons with Disabilities Act, 2016 remains only a legal document without intense sensitisation of government functionaries and citizens regarding disability. Comment. (2022)
Introduction	India's commitment to disability rights is enshrined in the Rights of Persons with Disabilities (RPwD) Act, 2016, which mandates equality, non-discrimination, and access to welfare. To operationalise this, the Union government introduced the Unique Disability ID (UDID) scheme in 2016 to create a centralised database and a single national identity for PwDs. However, data from the Department of Empowerment of Persons with Disabilities (DEPwD, 2025) shows that less than 40% of PwDs possess UDID cards, reflecting persistent barriers in welfare delivery.
Body	<p>Status and Regional Variation</p> <ul style="list-style-type: none"> National coverage is below 40% of the projected 2.68 crore PwD population (Census 2011 + NSS 76th Round estimates). Only Tamil Nadu, Karnataka, Odisha, and Meghalaya have crossed 50% coverage. Over 11 lakh applications are pending, with 60% pending for more than six months; Himachal Pradesh and Ladakh report over 80% long-pending cases. <p>Key Challenges in Implementation</p> <ul style="list-style-type: none"> Delayed Processing: Bureaucratic bottlenecks and understaffed medical boards cause backlogs. Digital Divide: Applications are online-only; PwDs must upload scanned documents. Yet, only 60% of Indians (15+) have basic digital skills such as copy-paste. The share is lower for women, compounding exclusion. Awareness Gaps: Earlier, states issued their own certificates; the transition to UDID was not well publicised. Funding Cuts: Despite rising allocations for PwD schemes overall, UDID sub-scheme funding has reduced (2019–2023)

trend).

- **Policy Exclusions:** The government panel recently rejected inclusion of nine medical conditions under the RPwD list, further narrowing eligibility.

Impact of Low UDID Coverage

- **Restricted Access:** PwDs cannot easily access ADIP scheme benefits (wheelchairs, crutches, prosthetics, hearing aids).
- **Educational Disadvantage:** Scholarships and reservations in government jobs are linked to UDID possession.
- **Fragmented Data:** Lack of comprehensive digital database hinders targeted policy planning.
- **Social Exclusion:** Bureaucratic and digital hurdles deepen marginalisation, particularly for rural, poor, and women PwDs.

Policy Significance and Judicial Backing

- The RPwD Act (2016) aligns with India's obligations under the **UN Convention on the Rights of Persons with Disabilities (UNCRPD)**.
- The **Supreme Court in Rajive Raturi v. Union of India (2016)** directed governments to ensure accessibility in public services, extending to welfare delivery.
- The UDID scheme, if implemented effectively, can serve as a robust tool for welfare integration, policy monitoring, and digital inclusion.

Way Forward: Towards Inclusive Implementation

- **Strengthen Processing Capacity:** More medical boards and digital facilitation centres at district level to clear backlogs.
- **Hybrid Model:** Offline application and paper-based verification for those lacking digital access.
- **Awareness Campaigns:** Panchayat-level outreach, especially targeting women and rural PwDs.
- **Dedicated Funding:** Restore and expand UDID sub-scheme allocations; integrate with flagship programmes like Digital India.
- **Accountability Mechanisms:** Periodic audits, parliamentary committee reviews, and real-time public dashboards on application pendency.
- **Legal Expansion:** Consider revisiting the disability list under the RPwD Act in consultation with medical experts and disability rights groups

Conclusion

The UDID scheme reflects a progressive vision of streamlining welfare

delivery for PwDs, but its promise remains unrealised due to bureaucratic inertia, digital exclusion, and policy neglect. Moving forward, India must treat PwDs not merely as beneficiaries but as rights-holders, ensuring that identification systems do not become barriers to entitlements. A people-centric, technology-enabled, but accessibility-conscious approach is essential to make the UDID a true enabler of dignity, opportunity, and equality.

Q 20. The 80th UN General Assembly opened with landmark commitments under the Beijing+30 Action Agenda, pledging 212 actions for women and girls. Critically examine the significance of these pledges for global gender equality and their implications for India. (15 marks, 250 words)

Topic – Global gender equality

Source: Down to Earth

https://www.downtoearth.org.in/governance/world-leaders-pledge-212-actions-for-women-and-girls-at-unga80?utm_source=website&utm_medium=related-stories

Introduction	Women’s empowerment and gender equality remain central to sustainable development and inclusive governance. The Beijing Declaration and Platform for Action (1995) laid the foundation for global commitments on women’s rights, and its 30th anniversary (Beijing+30) was marked at the 80th session of the UN General Assembly (UNGA80) in September 2025. With 109 governments pledging 212 national actions, the event is seen as the strongest multilateral stand for women in decades, coming at a time when gender rights face renewed backlash globally.
Body	<ul style="list-style-type: none">• Context and Significance of Beijing+30• Scale of Global Commitments• Institutional and Multilateral Dimensions• Implications for India• Challenges and Way Forward
Conclusion	The Beijing+30 Action Agenda at UNGA80 reflects renewed global commitment to gender equality, with 212 actions pledged at a time of growing resistance to women’s rights. For India, it offers both an opportunity and responsibility to strengthen national frameworks in line with international commitments. The success of these pledges will depend not merely on words, but on the policies, budgets, and courage nations deploy to ensure that the unfinished revolution for women’s rights moves closer to completion.

UPSC Syllabus	Global gender equality
Why was this question asked?	Q. Is the National Commission for Women able to strategize and tackle the problems that women face at both public and private spheres? Give reasons in support of your answer. (2017)
Introduction	Women’s empowerment and gender equality remain central to sustainable development and inclusive governance. The Beijing Declaration and Platform for Action (1995) laid the foundation for global commitments on women’s rights, and its 30th anniversary (Beijing+30) was marked at the 80th session of the UN General Assembly (UNGA80) in September 2025. With 109 governments pledging 212 national actions, the event is seen as the strongest multilateral stand for women in decades, coming at a time when gender rights face renewed backlash globally.
Body	<p>Context and Significance of Beijing+30</p> <ul style="list-style-type: none"> • The Beijing Platform of 1995 remains the most comprehensive global framework on women’s empowerment. • The 2025 pledges revive momentum by aligning with SDG 5 (Gender Equality) and the UN’s founding ideals of equal rights. • The timing is significant: 30 years since Beijing, 15 years since the creation of UN Women, and 80 years of the UN itself. <p>Scale of Global Commitments</p> <ul style="list-style-type: none"> • 109 governments pledged 212 national actions addressing issues like women’s participation in decision-making, equal pay, reproductive health, and protection from violence. • High participation: 155 speakers, including 15 heads of state, 10 heads of government (8 women), and 77 ministers. • Symbolic leadership: Annalena Baerbock became the 5th female President of the UNGA, underlining women’s presence in global governance. <p>Institutional and Multilateral Dimensions</p> <ul style="list-style-type: none"> • Adoption of a resolution to revitalise the Commission on the Status of Women (CSW) ensures stronger monitoring of commitments. • The UN Secretary-General termed women’s rights “global imperatives,” emphasising that equality is not a partisan cause. • The pledges reinforce multilateralism at a time of fragmentation and backlash against gender rights worldwide. <p>Implications for India</p> <ul style="list-style-type: none"> • As a signatory, India is expected to align Beijing+30 pledges

with its national frameworks.

- Possible areas of focus:
- **Political representation:** Building on 33% reservation in local bodies and the 2023 Women's Reservation Bill for Parliament/Assemblies.
- **Economic empowerment:** Bridging the gender gap in labour force participation.
- **Social indicators:** Improving maternal health, education outcomes, and protection from gender-based violence.
- India's experience with initiatives like **Beti Bachao Beti Padhao** and **Maternity Benefit Act** can feed into global best practices.

Challenges and Way Forward

- Translating pledges into action requires **adequate budgets, policy reforms, and institutional courage**, as highlighted by UN Women.
- Need for **intersectional approaches** that address rural women, marginalised groups, and women in conflict zones.
- Building **accountability frameworks** at national and global levels to ensure that commitments are not symbolic.
- Encouraging greater **male participation and societal attitudinal change** to sustain reforms.

Conclusion

The Beijing+30 Action Agenda at UNGA80 reflects renewed global commitment to gender equality, with 212 actions pledged at a time of growing resistance to women's rights. For India, it offers both an opportunity and responsibility to strengthen national frameworks in line with international commitments. The success of these pledges will depend not merely on words, but on the policies, budgets, and courage nations deploy to ensure that the unfinished revolution for women's rights moves closer to completion.

Economy

Q21. The recent U.S. decision to impose 100% tariffs on imported branded and patented medicines has been described as “weaponising health care.” Analyse the likely implications of this move for American households, global pharmaceutical trade, and India’s healthcare diplomacy. (15 marks, 250 words)

Topic – U.S. decision to impose 100% tariffs on medicines

Source: The Hindu

<https://www.thehindu.com/opinion/editorial/weaponising-health-care-on-the-trump-tariffs-on-imported-medicines/article70105428.ece>

Introduction	Healthcare access is often shaped not only by medical innovation but also by trade and policy choices. The U.S. administration’s decision to impose 100% tariffs on imported branded and patented medicines from October 2025, while sparing imports from the EU and Japan to a 15% cap, represents a significant politicisation of healthcare markets. This policy may have profound implications for American households, insurance systems, global pharmaceutical flows, and India’s position as a generic drug powerhouse.
Body	<ul style="list-style-type: none"> • Impact on U.S. Households and Patients • Implications for U.S. Healthcare System • Global Pharmaceutical Trade Repercussions • Consequences for India • Way Forward
Conclusion	Weaponising healthcare through tariff wars undermines global equity in medicine access. While the U.S. move may serve short-term political or industrial interests, it risks escalating healthcare costs for its own citizens and destabilising global pharma trade. For India, the episode reinforces the need to balance its generic drug strengths with innovation capacity and to champion healthcare as a global public good in international diplomacy.

UPSC Syllabus	Global trade
Why was this question asked?	Q. How would the recent phenomena of protectionism and currency manipulations in world trade affect macroeconomic stability of India? (2018)
Introduction	Healthcare access is often shaped not only by medical innovation but also by trade and policy choices. The U.S. administration’s decision to impose 100% tariffs on imported branded and patented medicines from

October 2025, while sparing imports from the EU and Japan to a 15% cap, represents a significant politicisation of healthcare markets. This policy may have profound implications for American households, insurance systems, global pharmaceutical flows, and India's position as a generic drug powerhouse.

Body

Impact on U.S. Households and Patients

- **Rising drug costs:** With prescription drugs already comprising ~10% of household medical spending, doubling tariffs will sharply increase out-of-pocket costs.
- **Access barriers:** Patients requiring specialised drugs for cancer, diabetes (e.g., Wegovy, Ozempic), or rare diseases may face delayed or unaffordable treatments.
- **Insurance burden:** Health insurance firms will likely pass on higher costs to consumers through increased premiums and co-pays.

Implications for U.S. Healthcare System

- **Inequality in access:** Middle- and low-income families may be disproportionately impacted.
- **Public health risks:** Higher costs could reduce medication adherence, worsening chronic disease outcomes.
- **Political backlash:** With healthcare a key electoral issue, tariffs risk fuelling public dissatisfaction against policy-driven price hikes.

Global Pharmaceutical Trade Repercussions

- **Trade distortions:** The U.S. is the world's largest pharmaceutical market; tariffs may disrupt global supply chains.
- **Winners and losers:** EU and Japan retain preferential access, while countries outside these blocs—such as India, Israel, and Switzerland—face market disadvantage.
- **Innovation slowdown:** Higher trade barriers may discourage pharma R&D collaborations, particularly in biologics and rare disease treatments.

Consequences for India

- **Limited immediate impact:** India exports mainly generics, which fall outside patented drug categories, and therefore may not directly face tariffs.
- **Opportunity in affordability:** India could leverage its reputation as the “pharmacy of the Global South” to supply cheaper alternatives in other markets.
- **Strategic pressure:** If U.S. expands tariffs beyond patented drugs, Indian exports could be hurt, especially in formulations

	<p>and biologics.</p> <ul style="list-style-type: none">• Health diplomacy: India may strengthen its global stance by highlighting affordable drug access as a human rights and development issue in multilateral forums (e.g., WHO, WTO-TRIPS). <p>Way Forward</p> <ul style="list-style-type: none">• For the U.S.: Policy must balance domestic industrial goals with patient welfare; tariff-induced protectionism may be counterproductive.• For India: Engage in proactive trade negotiations with the U.S. to safeguard generic exports.• Multilateral action: WTO and WHO must push for exemptions on essential medicines from tariff wars.• Domestic preparedness: India should invest in innovation and patented drug R&D to reduce vulnerability in high-value pharma segments.
<p>Conclusion</p>	<p>Weaponising healthcare through tariff wars undermines global equity in medicine access. While the U.S. move may serve short-term political or industrial interests, it risks escalating healthcare costs for its own citizens and destabilising global pharma trade. For India, the episode reinforces the need to balance its generic drug strengths with innovation capacity and to champion healthcare as a global public good in international diplomacy.</p>

Q 22. The Union Cabinet has recently approved a ₹70,000 crore revival package for India's shipbuilding and maritime sector. Discuss the significance of this reform in the context of India's economic growth and maritime strategy. (15 marks, 250 words)

Topic – India's shipbuilding and maritime sector

Source: The Hindustan Times

<https://www.hindustantimes.com/india-news/shipbuilding-maritime-sector-get-70k-cr-cabinet-nod-101758740978474.html>

<p>Introduction</p>	<p>Shipbuilding is a core industry with extensive backward and forward linkages, often described as the “mother of heavy engineering.” India's maritime sector already handles 95% of trade by volume and 65% by value (Ministry of Shipping, 2023), but domestic shipbuilding remains underdeveloped—India contributes less than 1% of global ship orders (UNCTAD Maritime Report 2023). In this backdrop, the Union Cabinet approved a ₹69,725 crore revival package (2025–2036) with a four-</p>
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	pillar strategy, expected to create 30 lakh jobs and attract nearly ₹4.5 lakh crore investments.
Body	<ul style="list-style-type: none"> • Four-Pillar Structure of the Revival Package • Economic Significance • Strategic and Security Dimensions • Challenges and Concerns • Way Forward
Conclusion	The ₹70,000 crore shipbuilding revival package is not merely an industrial reform but a strategic vision that ties together economic revival, blue economy growth, and maritime security. If executed with efficiency, technological modernisation, and global integration, it can transform India from a marginal player into a maritime powerhouse, fulfilling the goals of Viksit Bharat 2047 and enhancing India's influence across the Indo-Pacific.

UPSC Syllabus	India's economic growth and Infrastructure
Why was this question asked?	Q. "Investment in infrastructure is essential for more rapid and inclusive economic growth." Discuss in the light of India's experience. (2021)
Introduction	Shipbuilding is a core industry with extensive backward and forward linkages, often described as the "mother of heavy engineering." India's maritime sector already handles 95% of trade by volume and 65% by value (Ministry of Shipping, 2023), but domestic shipbuilding remains underdeveloped—India contributes less than 1% of global ship orders (UNCTAD Maritime Report 2023). In this backdrop, the Union Cabinet approved a ₹69,725 crore revival package (2025–2036) with a four-pillar strategy, expected to create 30 lakh jobs and attract nearly ₹4.5 lakh crore investments.
Body	<p>Four-Pillar Structure of the Revival Package</p> <ul style="list-style-type: none"> • Shipbuilding Financial Assistance Scheme (₹24,736 cr): Extended till 2036; includes a Shipbreaking Credit Note (₹4,001 cr) to boost India's role as the world's largest ship recycler (40% global share, UNCTAD 2023). • Maritime Development Fund (₹25,000 cr): Provides cheaper finance, promotes Indian tonnage (currently ~1.5% of global share), and strengthens infrastructure like shipyards and repair hubs. • Shipbuilding Development Scheme (₹19,989 cr): Focuses on greenfield clusters and brownfield expansion to compete with

East Asian hubs.

- **Legal/Policy Reforms:** Overhauls the **Merchant Shipping Act (1958)**, **Carriage of Goods by Sea Act (1925)**, **Indian Ports Act (1908)** to match **IMO (International Maritime Organization)** standards.

Economic Significance

- **Employment generation:** Nearly **30 lakh jobs** across coastal states, enhancing blue economy participation.
- **Industrial boost:** Shipbuilding has a **multiplier effect of 6.8 on GDP and 6.4 on employment (Planning Commission Report on Shipbuilding, 2012)**.
- **Export potential:** India's shipbuilding output could rise to **8.2 million gross tonnage (GT)** by 2036, strengthening its share in the global market.
- **Investment flows:** ₹4.5 lakh crore expected, aiding Make in India and Atmanirbhar Bharat initiatives.

Strategic and Security Dimensions

- **Historical legacy:** Till the 18th century, Indian shipyards (Surat, Bombay, Calcutta) produced globally sought-after vessels, noted by colonial records. Reviving this heritage strengthens soft power.
- **National security:** Domestic shipyards can bolster **Indian Navy's Atmanirbhar warship programme**; INS Vikrant (2022) showed India's capacity.
- **Indo-Pacific presence:** Enhanced tonnage supports India's SAGAR (Security and Growth for All in the Region) doctrine and Blue Economy ambitions.
- **Energy & logistics security:** Indigenous capacity for LNG carriers and oil tankers reduces import dependence and freight costs.

Challenges and Concerns

- **Global competition:** China, South Korea, and Japan together account for **90% of shipbuilding orders (Clarksons Research, 2023)**.
- **Skill gap:** India faces shortages in marine engineers and naval architects (DG Shipping, 2022 report).
- **Technology lag:** Low R&D in green shipping (hydrogen fuel cells, LNG propulsion) may hinder competitiveness.
- **Implementation risks:** Past schemes like the **2002 Shipbuilding Subsidy Scheme** failed due to delays and weak yard capacity.

Way Forward

	<ul style="list-style-type: none"> • Cluster-based growth: Develop coastal hubs in Gujarat (Alang), Andhra Pradesh (Visakhapatnam), Tamil Nadu (Ennore), Kerala (Cochin). • R&D and green shipping: Invest in IMO 2050 decarbonisation targets, hydrogen propulsion, and autonomous ships. • Public-Private Partnerships: Leverage private investment with assured government backing. • Skill development: Expand Indian Maritime University (IMU) network to train engineers, welders, and designers. • Global integration: Partnerships with Japan and South Korea for technology transfer.
Conclusion	<p>The ₹70,000 crore shipbuilding revival package is not merely an industrial reform but a strategic vision that ties together economic revival, blue economy growth, and maritime security. If executed with efficiency, technological modernisation, and global integration, it can transform India from a marginal player into a maritime powerhouse, fulfilling the goals of Viksit Bharat 2047 and enhancing India's influence across the Indo-Pacific.</p>

Q23. "India continues to resist a full-fledged regulatory framework for cryptocurrencies, citing systemic risks. Critically examine India's cautious approach towards virtual digital assets in the context of global trends." (15 marks, 250 words)

Topic – Digital currency regulation in India

Source: The Hindu

<https://www.thehindu.com/business/Industry/india-resists-full-crypto-framework-fears-systemic-risks-document-shows/article70035068.ece>

Introduction	<p>Cryptocurrencies and stablecoins have emerged as disruptive innovations in the global financial system. While countries like the U.S. and Japan are developing regulatory frameworks, and China continues with bans alongside its digital Yuan project, India has opted for a cautious path. The government, supported by the Reserve Bank of India (RBI), fears systemic risks and dilution of monetary sovereignty if cryptocurrencies are fully legitimised. Indians already hold an estimated \$4.5 billion in cryptocurrencies, yet the sector remains largely speculative and unregulated.</p>
Body	<ul style="list-style-type: none"> • India's Present Stance on Cryptocurrencies • Risks Driving India's Cautious Approach • Global Approaches: A Comparative View

	<ul style="list-style-type: none"> • Implications for India’s Economy and Innovation • The Way Forward
Conclusion	<p>India’s reluctance to frame a comprehensive cryptocurrency law reflects a pragmatic balancing of financial stability, consumer protection, and sovereignty. While global peers move towards cautious regulation, India is prioritising systemic safety over rapid liberalisation. The path ahead lies in strengthening CBDC, supporting blockchain innovation, and shaping global norms. A calibrated, risk-based regulatory stance will enable India to harness digital innovation without jeopardising its monetary stability or payment sovereignty.</p>

UPSC Syllabus	Global financial system and its regulation
Why was this question asked?	Q. How would the recent phenomena of protectionism and currency manipulations in world trade affect macroeconomic stability of India? (2018)
Introduction	<p>Cryptocurrencies and stablecoins have emerged as disruptive innovations in the global financial system. While countries like the U.S. and Japan are developing regulatory frameworks, and China continues with bans alongside its digital Yuan project, India has opted for a cautious path. The government, supported by the Reserve Bank of India (RBI), fears systemic risks and dilution of monetary sovereignty if cryptocurrencies are fully legitimised. Indians already hold an estimated \$4.5 billion in cryptocurrencies, yet the sector remains largely speculative and unregulated.</p>
Body	<p>India’s Present Stance on Cryptocurrencies</p> <ul style="list-style-type: none"> • India has refrained from enacting a comprehensive law on cryptocurrencies despite earlier drafts such as the 2021 Cryptocurrency and Regulation of Official Digital Currency Bill. • The government relies on taxation, anti–money laundering provisions, and Prevention of Money Laundering Act (PMLA), 2002 coverage to exercise partial oversight. • The 2022 Union Budget introduced a 30% tax on virtual digital asset gains and 1% TDS on transactions, which has acted as a deterrent against speculative trading. • The RBI has maintained that allowing cryptocurrencies into the mainstream would “pose risks to financial stability,” as flagged in its Financial Stability Reports (FSR), 2022 and 2023. <p>Risks Driving India’s Cautious Approach</p>

- Regulation could grant cryptocurrencies legitimacy and make them systemic, thereby threatening the **monetary sovereignty of the rupee**.
- Widespread use of **U.S. dollar-backed stablecoins** could entrench dollar dependence and weaken domestic payment systems like **Unified Payments Interface (UPI)**, as noted in internal assessments following the **G20 Finance Ministers' Communiqué, 2023**.
- Peer-to-peer trading and decentralised exchanges make enforcement extremely difficult, raising risks of illicit financing and terror funding, issues highlighted in **FATF (Financial Action Task Force) reports**.
- Volatility, frauds, and lack of intrinsic value expose small investors, a concern underscored in **RBI's Report on Trend and Progress of Banking in India, 2023**.

Global Approaches: A Comparative View

- The **United States** enacted the **GENIUS Act, 2025**, creating a legal framework for stablecoins and encouraging their use in payment systems.
- **China** continues to ban private cryptocurrencies but is piloting the **Digital Yuan (CBDC)** under the **People's Bank of China (PBoC)**.
- **Japan and Australia** are building regulatory frameworks that allow usage with safeguards but stop short of promoting them.
- The **IMF's Global Financial Stability Report (2023)** warned that unregulated crypto adoption could threaten emerging markets with currency substitution and capital flight.

Implications for India's Economy and Innovation

- The current approach shields India's regulated financial system from contagion, with crypto assets still not being a systemic risk.
- Protecting UPI and RuPay ensures **digital sovereignty** in payments, reinforcing India's leadership in fintech diplomacy.
- However, excessive caution may discourage innovation and push Indian blockchain startups to relocate abroad, reducing competitiveness in the global fintech market.
- Taxation without regulation has shrunk volumes but also narrowed the potential tax base.

The Way Forward

- India should continue developing its **Central Bank Digital Currency (CBDC or e₹)**, piloted by RBI since 2022, as a sovereign alternative to cryptocurrencies.

	<ul style="list-style-type: none"> • A risk-differentiated regulatory framework should be considered, distinguishing between speculative tokens and fiat-pegged stablecoins. • India must engage in global coordination under G20, IMF, and BIS frameworks to prevent regulatory arbitrage and cross-border risks. • Blockchain innovation should be promoted in non-financial sectors such as supply chains, health, and governance, without legitimising speculative crypto assets.
Conclusion	<p>India's reluctance to frame a comprehensive cryptocurrency law reflects a pragmatic balancing of financial stability, consumer protection, and sovereignty. While global peers move towards cautious regulation, India is prioritising systemic safety over rapid liberalisation. The path ahead lies in strengthening CBDC, supporting blockchain innovation, and shaping global norms. A calibrated, risk-based regulatory stance will enable India to harness digital innovation without jeopardising its monetary stability or payment sovereignty.</p>

Q24. India has improved its SDG rankings, but progress on SDG 3 (Good Health and Well-being) remains uneven. Critically examine the challenges and suggest a holistic approach to bridge the gaps. (15 marks, 250 words)

Topic – Sustainable Development Goals and Health

Source: The Hindu

<https://www.thehindu.com/opinion/op-ed/india-needs-more-focus-to-reach-sdg-3-a-crucial-goal/article70066830.ece>

Introduction	<p>The Sustainable Development Goals (SDGs), adopted by the United Nations in 2015, set a global agenda for equitable and sustainable development by 2030. SDG 3 aims to 'ensure healthy lives and promote well-being for all at all ages'. India's rank improved from 109 (2024) to 99 (2025) in the SDG Index, showing progress in basic services and infrastructure. Yet, health indicators such as Maternal Mortality Ratio (MMR), under-five mortality, life expectancy, and out-of-pocket expenditure reveal that India is not on track to achieve SDG 3.</p>
Body	<ul style="list-style-type: none"> • Current Gaps in Health Outcomes • Structural and Systemic Challenges • Strengthening Universal Health Coverage (UHC) • Prevention-Oriented Health Education • Multi-Stakeholder and Policy Actions
Conclusion	<p>India's improved SDG ranking reflects progress but masks the persistent gaps in health and nutrition. Achieving SDG 3 by 2030 requires a dual</p>

focus: strengthening healthcare infrastructure and embedding preventive health education at the school level. With concerted actions by the State, society, and individuals, India can not only meet the 2030 deadline but also lay the foundation for a Viksit Bharat 2047 that ensures healthier and longer lives for its citizens.

UPSC Syllabus	Sustainable Development Goals and Health
Why was this question asked?	'Besides being a moral imperative of a Welfare State, primary health structure is a necessary precondition for sustainable development.' Analyze. (2021)
Introduction	The Sustainable Development Goals (SDGs), adopted by the United Nations in 2015, set a global agenda for equitable and sustainable development by 2030. SDG 3 aims to 'ensure healthy lives and promote well-being for all at all ages'. India's rank improved from 109 (2024) to 99 (2025) in the SDG Index, showing progress in basic services and infrastructure. Yet, health indicators such as Maternal Mortality Ratio (MMR), under-five mortality, life expectancy, and out-of-pocket expenditure reveal that India is not on track to achieve SDG 3.
Body	<p>Current Gaps in Health Outcomes</p> <ul style="list-style-type: none"> • Maternal Mortality Ratio (MMR): 97 per 100,000 live births, above the SDG 2030 target of 70. • Under-five Mortality Rate (U5MR): 32 per 1,000 live births, against the target of 25. • Life Expectancy: 70 years, short of the 2030 target of 73.63 years. • Out-of-pocket Expenditure (OOPE): 13% of total consumption, nearly double the target of 7.83%. • Immunisation Coverage: 93.23%—progressive, but below universal 100%. <p>Structural and Systemic Challenges</p> <ul style="list-style-type: none"> • Healthcare Infrastructure Deficit: Weak public health systems, especially in rural and tribal areas. • Inequities in Access: Economic and regional disparities hinder universal coverage. • Nutrition and Sanitation: Malnutrition, poor hygiene, and unsafe drinking water worsen health outcomes. • Cultural Barriers: Stigma around reproductive and mental health restricts utilisation of services. <p>Strengthening Universal Health Coverage (UHC)</p>

- Expansion of **Ayushman Bharat – Pradhan Mantri Jan Arogya Yojana (PM-JAY)** for financial risk protection.
- Strengthening **Primary Health Centres (PHCs)** to ensure early detection and referral.
- **Integration of care** across primary, secondary, and tertiary levels for efficiency.
- **Digital health tools** (telemedicine, digital health records) to improve outreach in underserved areas.

Prevention-Oriented Health Education

- Introduce **compulsory health education in schools** focusing on:
 - Nutrition and hygiene.
 - Reproductive and sexual health.
 - Road safety and first aid.
 - Mental health and emotional well-being.
- Evidence from **Finland** (school-based reforms reducing cardiovascular mortality) and **Japan** (compulsory health education linked to higher life expectancy) shows long-term impact.
- In India, health education can create healthier adults, reduce MMR/U5MR, and enhance immunisation uptake.

Multi-Stakeholder and Policy Actions

- **Policymakers:** Embed structured health curricula; expand UHC and health financing.
- **Parents & Communities:** Support and reinforce school health lessons at home.
- **Private Sector & NGOs:** Collaborate on awareness campaigns and digital health innovations.
- **Global Partnerships:** Leverage WHO and World Bank models to strengthen primary care and insurance mechanisms.

Conclusion

India's improved SDG ranking reflects progress but masks the persistent gaps in health and nutrition. Achieving SDG 3 by 2030 requires a dual focus: strengthening healthcare infrastructure and embedding preventive health education at the school level. With concerted actions by the State, society, and individuals, India can not only meet the 2030 deadline but also lay the foundation for a Viksit Bharat 2047 that ensures healthier and longer lives for its citizens.

Q 25. Neither the government nor the RBI will likely be alarmed by the rise in retail inflation in August 2025, even though it snapped a nine-month streak of declining inflation rates. Critically analyse India's inflation-growth scenario in this context. (15 marks, 250 words)

Topic – India's inflation-growth scenario

Source: The Hindu

<https://www.thehindu.com/opinion/editorial/improving-macros-on-the-outlook-for-inflation/article70048567.ece>

Introduction	Price stability and sustained growth are the twin pillars of India's macroeconomic management. Retail inflation in August 2025 rose marginally to 2.1%, ending a nine-month declining trend. Yet, this rise remains well within the Reserve Bank of India's (RBI) tolerance band of 2–6% under its flexible inflation targeting framework. Simultaneously, GDP growth in the first quarter of 2025–26 has been robust, creating a rare and favourable macroeconomic setting: high growth with low inflation. This stands in sharp contrast to the scenario in 2024 when India struggled with low growth and high inflation, reflecting structural improvements in both demand and supply management.
Body	<ul style="list-style-type: none"> • Current Inflation Dynamics • Policy Measures and Government Interventions • Growth-Inflation Differential: A Positive Shift • External Factors and Global Linkages • Monetary Policy Outlook
Conclusion	India's present macroeconomic context—benign inflation coupled with robust growth—marks a reversal from the stagflation-like pressures of the previous year. Food price corrections, fiscal prudence, and GST reforms have complemented monetary discipline, creating a stable economic environment. However, global uncertainties, climate-linked supply shocks, and oil price volatility remain potential disruptors. A calibrated approach—supporting growth while keeping inflation expectations anchored—will be vital to sustaining this favourable growth-inflation balance and reinforcing India's economic resilience.

UPSC Syllabus	India's inflation-growth scenario
Why was this question asked?	Q. Do you agree with the view that steady GDP growth and low inflation have left the Indian economy in good shape? Give reasons in support of your arguments. (2019)
Introduction	Price stability and sustained growth are the twin pillars of India's macroeconomic management. Retail inflation in August 2025 rose

marginally to 2.1%, ending a nine-month declining trend. Yet, this rise remains well within the Reserve Bank of India's (RBI) tolerance band of 2–6% under its flexible inflation targeting framework. Simultaneously, GDP growth in the first quarter of 2025–26 has been robust, creating a rare and favourable macroeconomic setting: high growth with low inflation. This stands in sharp contrast to the scenario in 2024 when India struggled with low growth and high inflation, reflecting structural improvements in both demand and supply management.

Body

Current Inflation Dynamics

- **Food prices:** August witnessed significant deflationary trends in key items—vegetables (-15.9%) and pulses (-14.5%). Together with the **NFSA free foodgrains scheme**, these contractions have ensured affordable access to basic food commodities across rural and urban households.
- **Non-food inflation:** Categories like housing, fuel & light, clothing, and footwear also recorded lower inflation in August compared to July.
- **Core inflation stability:** With demand-driven pressures subdued, core inflation remains anchored, reducing volatility.

The inflation profile is not only within the target range but also **distributionally favourable** for poorer households, given food's high weight in the CPI basket.

Policy Measures and Government Interventions

- **National Food Security Act (NFSA):** The continued supply of free foodgrains to nearly 800 million beneficiaries has softened food inflation pressures.
- **GST rationalisation (September 2025):** New GST rates are expected to further reduce the cost of several goods and services, aligning with inflation management.
- **Fiscal stance:** The government has avoided excessive populist spending, focusing instead on targeted subsidies, thereby preventing demand-side overheating.
- **Monetary stance:** The RBI's earlier cautious approach—holding rates steady despite calls for easing—has maintained inflation expectations under control.

A combination of **supply-side support** and **demand-side discipline** has been crucial to stabilising prices.

Growth-Inflation Differential: A Positive Shift

- In 2024, India experienced **low growth-high inflation**, with the growth–inflation gap just **2.1 percentage points**.

- In 2025, the gap has widened to **5.5 percentage points**, reflecting high growth alongside benign inflation.
- Strong domestic demand, revival in investment, and service-sector resilience are pushing growth without fuelling inflation.
- This shift highlights **macroeconomic resilience** and provides fiscal and monetary authorities more policy space.

The present scenario is not merely cyclical but suggests structural improvements in **agricultural supply chains, consumption support, and fiscal prudence**.

External Factors and Global Linkages

- **Oil imports:** Even if India reduces Russian oil purchases under U.S. pressure, the inflationary impact will be muted due to **low global crude prices** and diminished attractiveness of Russian discounts compared to 2022.
- **Global uncertainties:** Geopolitical risks, climate change impacts on agriculture, and supply chain vulnerabilities could still disrupt price stability.
- **Global growth slowdown:** Weak demand in advanced economies may reduce export earnings, but it also keeps commodity prices lower, indirectly benefiting India's inflation outlook.

India's inflation trajectory is increasingly **de-linked from external oil shocks** compared to past years, but vulnerabilities remain.

Monetary Policy Outlook

- With low inflation and high growth, pressure mounts on the **Monetary Policy Committee (MPC)** to cut interest rates.
- However, a **September rate cut may be premature** given global volatility and potential oil price movements.
- A more likely scenario is a **December 2025 cut**, contingent on continued price stability and favourable external conditions.
- Premature easing could risk capital outflows, rupee depreciation, and imported inflation.

RBI must balance domestic growth optimism with **prudence amid global uncertainties**.

Conclusion

India's present macroeconomic context—benign inflation coupled with robust growth—marks a reversal from the stagflation-like pressures of the previous year. Food price corrections, fiscal prudence, and GST reforms have complemented monetary discipline, creating a stable economic environment. However, global uncertainties, climate-linked supply shocks, and oil price volatility remain potential disruptors. A calibrated approach—supporting growth while keeping inflation

expectations anchored—will be vital to sustaining this favourable growth-inflation balance and reinforcing India’s economic resilience.

Q 26. India’s aspiration to become a \$30 trillion economy by 2047 requires women to be at the center of growth. Discuss how better gender-disaggregated data can bridge gaps in women’s economic participation. (15 marks, 250 words)

Topic – Women’s economic participation

Source: The Hindu

<https://www.thehindu.com/opinion/op-ed/indias-economic-ambitions-need-better-gender-data/article70052746.ece>

Introduction	Women currently contribute only about 18% to India’s GDP despite forming nearly half the population. To achieve its \$30 trillion economic ambition by 2047, India must ensure that women’s economic participation is visible, measurable, and embedded in policy. Gender-disaggregated data is the first step toward achieving this transformation.
Body	<ul style="list-style-type: none"> • Significance of Gender-Disaggregated Data • Current Data Trends in India • Challenges in India’s Gender Data Ecosystem • Pathways to Strengthening Gender Data • National Impact of Systematic Gender Data
Conclusion	India’s growth ambitions are inseparable from women’s empowerment. Without reliable gender-disaggregated data, women’s contributions remain invisible and reforms stall. Embedding a gender lens across all sectors and budgets will not only close gaps but also unlock trillions of dollars in potential growth. Making women’s economic role visible is the key to moving them from the margins to the mainstream of India’s development story.

UPSC Syllabus	Women’s economic participation
Why was this question asked?	Q. “Though women in post-Independent India have excelled in various fields, the social attitude towards women and feminist movement has been patriarchal.” Apart from women education and women empowerment schemes, what interventions can help change this milieu? (2021)
Introduction	Women currently contribute only about 18% to India’s GDP despite forming nearly half the population. To achieve its \$30 trillion economic ambition by 2047, India must ensure that women’s economic participation is visible, measurable, and embedded in policy. Gender-disaggregated data is the first step toward achieving this transformation.

Body

Significance of Gender-Disaggregated Data

- Makes visible the hidden drop-offs in the economic pipeline — from education to skilling, skilling to work, and entrepreneurship to credit.
- Provides evidence for targeted policy reforms in recruitment, credit access, safety, and infrastructure.
- Moves beyond aggregate figures, highlighting systemic barriers and structural inequalities.

Current Data Trends in India

- **Female Labour Force Participation Rate (FLFPR)** rose from ~32.8% (2021-22) to **41.7% (2023-24)**.
- **Worker Population Ratio (WPR)** for women 15+ years improved from **22% in 2017-18** to **40.3% in 2023-24**.
- Rural female LFPR increased from ~24.6% to ~41.5% between 2017-18 and 2022-23; urban LFPR rose from ~20.4% to ~25.4%.
- India ranks **131 out of 148 countries** in the **Global Gender Gap Index 2025**, with an economic participation score of just **40.7%**.

Challenges in India's Gender Data Ecosystem

- Most national indices lack gender breakdowns beyond headline numbers.
- Gender budgeting remains limited to welfare schemes rather than mainstream sectors like energy or housing.
- Local governments often lack institutional capacity to collect and use gendered data effectively.

Pathways to Strengthening Gender Data

- Institutionalise gender-disaggregated data in all departmental MIS systems.
- Track not just participation but also **leadership, wages, retention, re-entry, and quality of work**.
- Build capacity of district and state agencies to create evidence-based gender action plans.
- Link budget allocations to gender outcomes to mainstream accountability.

National Impact of Systematic Gender Data

- Enables district-wise and sector-wise reforms in employment, skilling, mobility, and entrepreneurship.
- Helps India leverage its demographic dividend more equitably.
- Supports inclusive economic growth and accelerates progress toward Sustainable Development Goal 5 (Gender Equality).

Conclusion

India's growth ambitions are inseparable from women's empowerment. Without reliable gender-disaggregated data, women's contributions remain invisible and reforms stall. Embedding a gender lens across all sectors and budgets will not only close gaps but also unlock trillions of dollars in potential growth. Making women's economic role visible is the key to moving them from the margins to the mainstream of India's development story.

Q27. The recent Red Sea undersea cable cut disrupted internet services across Asia. What are undersea cables, why are they important, and what vulnerabilities do they face? Discuss their economic, strategic, and security significance. (15 marks, 250 words)

Topic – Critical infrastructure - undersea fibre optic cables

Source: The Indian Express

https://indianexpress.com/article/explained/explained-sci-tech/undersea-cables-red-sea-internet-working-simplified-10239041/?ref=explained_pg

Introduction	Undersea fibre optic cables, often unseen and underappreciated, are the backbone of the global internet. They transmit nearly 95–98% of international digital traffic, enabling instantaneous communication across continents. The September 2025 Red Sea cable cut, which slowed services in India, Pakistan, and the Middle East, underscores both their indispensability and their fragility.
Body	<ul style="list-style-type: none"> • Nature and Evolution of Undersea Cables • Importance for Global Connectivity • Vulnerabilities and Risks • Strategic and Security Dimensions • Policy and Future Challenges
Conclusion	The Red Sea outage highlights that the internet's virtual flow rests on vulnerable physical infrastructure. For India and the world, submarine cables are as vital as oil pipelines or shipping lanes. Securing them through technology, cooperation, and resilience measures is essential to safeguard both digital economies and national security in the 21st century.

UPSC Syllabus	Critical infrastructure & cyber security
Why was this question asked?	Q. Discuss the advantages and security implications of cloud hosting of servers vis-a-vis in-house machine-based hosting for government businesses. (2015)
Introduction	Undersea fibre optic cables, often unseen and underappreciated, are the

backbone of the global internet. They transmit nearly 95–98% of international digital traffic, enabling instantaneous communication across continents. The September 2025 Red Sea cable cut, which slowed services in India, Pakistan, and the Middle East, underscores both their indispensability and their fragility.

Body

Nature and Evolution of Undersea Cables

- Submarine cables are long, insulated fibre optic wires laid on seabeds, transmitting data as light pulses. Each cable carries terabits of information per second.
- Their origin lies in 19th-century telegraph lines like the 1850 England–France connection and the 1858 trans-Atlantic cable.
- Today, more than 400 cables covering 1.4 million km link continents, with multiple protective layers safeguarding the thin glass fibres at the core.

Importance for Global Connectivity

- These cables underpin everyday services — financial transactions, e-commerce, banking, weather forecasting, and military communication.
- International phone calls and cross-border trade settlements also flow through them.
- For South Asia, cables through the Red Sea and Arabian Sea are lifelines; disruption leads to latency and slower internet speeds.
- Increasingly, Big Tech firms such as Meta (Project Waterworth, 50,000 km) and Google (Equiano, Dunant) own major cables, shifting control from governments to corporations.

Vulnerabilities and Risks

- Natural hazards include earthquakes, tsunamis, and strong currents. A 2006 Taiwan earthquake disrupted several Asian cables.
- Human activity is the largest risk: ship anchors, trawlers, and dredging cause nearly 200 incidents annually (CNN, 2019).
- Cases of sharks biting cables and accidental breakages show their exposure. Repairs are complex and expensive, requiring specialised cable ships.

Strategic and Security Dimensions

- Cable chokepoints such as the Red Sea, Malacca Strait, and South China Sea are geopolitically sensitive.
- Australia blocked Huawei from building a Pacific cable citing surveillance risks.
- Submarine cables also carry sensitive defence and diplomatic

	<p>data, making them potential targets in cyber warfare or conflict.</p> <ul style="list-style-type: none"> Rival powers like Russia and China are suspected of mapping cables for possible disruption, intensifying global security concerns. <p>Policy and Future Challenges</p> <ul style="list-style-type: none"> Diversifying routes and building redundancy will reduce over-dependence on chokepoints. Stronger enforcement of UNCLOS protections, regional cooperation, and naval monitoring are required. India must expand domestic landing stations, build indigenous cable-laying capacity, and use satellites as backup for emergencies. Global governance is needed to ensure that a handful of corporations do not monopolise the physical backbone of the internet.
Conclusion	<p>The Red Sea outage highlights that the internet’s virtual flow rests on vulnerable physical infrastructure. For India and the world, submarine cables are as vital as oil pipelines or shipping lanes. Securing them through technology, cooperation, and resilience measures is essential to safeguard both digital economies and national security in the 21st century.</p>

Q 28. Stablecoins promise stability in a volatile crypto world, but their very growth may destabilise financial systems.” Explain the nature of stablecoins and how they differ from other cryptocurrencies. Critically examine the risks flagged by regulators, with reference to India. (15 marks, 250 words)

Topic – Cryptocurrency

Source: The Indian Express

<https://indianexpress.com/article/explained/explained-economics/stablecoins-risks-bank-of-england-transaction-limits-10251751/>

Introduction	<p>Stablecoins are a class of cryptocurrencies designed to maintain stable value by being pegged to fiat currencies, commodities, or algorithms. Unlike highly volatile tokens like Bitcoin, stablecoins are meant for reliability in transactions, remittances, and value storage. The Bank of England has recently imposed transaction limits on stablecoins, citing risks to financial stability and systemic security.</p>
Body	<ul style="list-style-type: none"> What are Stablecoins? How Stablecoins Differ from Other Cryptocurrencies Key Risks Flagged by Regulators Global Responses to Stablecoin Risks

	<ul style="list-style-type: none"> India's Perspective and Impact
Conclusion	<p>Stablecoins combine the speed and innovation of digital assets with the stability of fiat money, making them attractive for global finance. At the same time, unregulated expansion of stablecoins could destabilize banking systems and weaken monetary policy. For India, the way forward lies in adopting a balanced regulatory framework that protects financial stability, supports the Digital Rupee, and enforces strict compliance measures to prevent misuse.</p>

UPSC Syllabus	Banking in India
Why was this question asked?	Q. How would the recent phenomena of protectionism and currency manipulations in world trade affect macroeconomic stability of India? (2018)
Introduction	<p>Stablecoins are a class of cryptocurrencies designed to maintain stable value by being pegged to fiat currencies, commodities, or algorithms. Unlike highly volatile tokens like Bitcoin, stablecoins are meant for reliability in transactions, remittances, and value storage. The Bank of England has recently imposed transaction limits on stablecoins, citing risks to financial stability and systemic security.</p>
Body	<p>What are Stablecoins?</p> <ul style="list-style-type: none"> Stablecoins are digital currencies pegged to a reference asset such as the US dollar, gold, or other cryptocurrencies. They include fiat-backed, commodity-backed, crypto-backed, and algorithmic stablecoins. Their primary function is to enable faster and cheaper transactions compared to traditional banking channels. <p>How Stablecoins Differ from Other Cryptocurrencies</p> <ul style="list-style-type: none"> Stablecoins maintain price stability, whereas most cryptocurrencies are subject to extreme volatility. Stablecoins are mainly used for cross-border payments, remittances, and as a store of value, while Bitcoin and Ethereum are used for speculation or investment. Stablecoins are backed by tangible reserves such as fiat or assets, whereas other cryptocurrencies derive value only from demand and supply. Stablecoins are more suitable for financial transactions, unlike traditional cryptos which lack transactional stability. <p>Key Risks Flagged by Regulators</p>

- Stablecoins create the risk of a “run,” where sudden mass withdrawals can destabilize the market, as seen in the TerraUSD crash of 2022.
- Stablecoins may cause deposit flight from commercial banks, reducing their lending capacity and affecting credit supply.
- Stablecoins, if adopted at scale, may undermine the authority of central banks and threaten monetary sovereignty.
- Stablecoins, due to their global and borderless nature, increase risks of money laundering, terror financing, and regulatory evasion.

Global Responses to Stablecoin Risks

- The Bank of England has imposed ownership and transaction limits to mitigate systemic risks.
- The United States has introduced the GENIUS Act mandating 1:1 reserves, licensed issuers, and AML/CFT compliance.
- The European Union has passed the MiCA regulation to oversee e-money tokens and asset-referenced tokens.
- Hong Kong has enacted the Stablecoin Ordinance requiring licenses, high-quality reserve assets, audits, and disclosure norms.

India’s Perspective and Impact

- India has not recognized private cryptocurrencies, and the Reserve Bank of India maintains a cautious stance.
- India has launched the Digital Rupee (CBDC) in pilot mode, which may face competition from stablecoins if not regulated.
- Stablecoins could drain deposits from Indian banks, affecting credit creation and financial stability.
- Stablecoins pose AML/CFT risks for India, particularly in cross-border transactions, given its FATF commitments.
- India is likely to follow a regulatory path that mandates reserve backing, KYC/AML compliance, and prioritizes the Digital Rupee while restricting private stablecoins.

Conclusion

Stablecoins combine the speed and innovation of digital assets with the stability of fiat money, making them attractive for global finance. At the same time, unregulated expansion of stablecoins could destabilize banking systems and weaken monetary policy. For India, the way forward lies in adopting a balanced regulatory framework that protects financial stability, supports the Digital Rupee, and enforces strict compliance measures to prevent misuse.

Q29. Can productivity alone be the key to faster growth? Discuss in the context of employment, demand, and sustainability of economic growth in India. (15 marks, 250 words)

Topic – Sustainability of economic growth in India

Source: The Hindu

<https://www.thehindu.com/opinion/op-ed/can-productivity-alone-be-the-key-to-faster-growth/article70063010.ece>

Introduction	Productivity growth is often hailed as the engine of economic expansion since it enables higher output from the same set of inputs. However, the sustainability of growth cannot be explained by productivity alone. In economies like India, where employment and income distribution significantly shape aggregate demand, productivity-driven growth—if divorced from job creation—can aggravate inequality, weaken demand, and make growth unsustainable in the long run.
Body	<ul style="list-style-type: none"> • Productivity and Employment Linkages • Demand-side Consequences of Productivity Gains • Role of Employment in Growth Sustainability • Limitations of Productivity-Only Strategy • Policy Implications
Conclusion	Productivity is a vital driver of economic efficiency, but productivity without employment is a hollow growth path. For India, sustainable growth requires harmonising productivity gains with job creation, wage growth, and inclusive demand expansion. Only when productivity is embedded in a broad-based, employment-oriented growth strategy can it act as a true catalyst for long-term development.

UPSC Syllabus	Sustainability of economic growth in India
Why was this question asked?	Q. Is inclusive growth possible under market economy? State the significance of financial inclusion in achieving economic growth in India. [2022]
Introduction	Productivity growth is often hailed as the engine of economic expansion since it enables higher output from the same set of inputs. However, the sustainability of growth cannot be explained by productivity alone. In economies like India, where employment and income distribution significantly shape aggregate demand, productivity-driven growth—if divorced from job creation—can aggravate inequality, weaken demand, and make growth unsustainable in the long run.

Body

Productivity and Employment Linkages

- **Capital-intensive bias:** Productivity rises often stem from automation and mechanisation, which raise output but reduce employment elasticity.
- **Jobless growth:** Rising GDP without parallel job creation decouples output from livelihoods, leading to weak demand.
- **Labour redundancy:** Displacement of workers curtails household purchasing power, undermining the demand-side contribution to growth.

Demand-side Consequences of Productivity Gains

- **Income concentration:** Higher productivity disproportionately benefits skilled workers and entrepreneurs.
- **Decline in mass demand:** A small rise in elite incomes cannot compensate for widespread income losses among workers.
- **Sustainability challenge:** Growth driven by a narrow consumption base leads to cyclical demand shocks and instability.

Role of Employment in Growth Sustainability

- **Employment as a demand stabiliser:** Broad-based job creation raises effective demand, driving long-term expansion.
- **Empirical evidence:** Studies show employment growth contributes more to output variance than output growth itself.
- **Wage growth:** Enhances aggregate demand and provides a multiplier effect for consumption-driven growth.

Limitations of Productivity-Only Strategy

- **Inequality trap:** Skewed income distribution fuels social unrest and political resistance to reforms.
- **Adverse external effects:** Over-reliance on capital-intensive imports and resource distortions can worsen balance-of-payments.
- **Inflationary misalignment:** Price incentives or mild inflation may temporarily boost supply, but long-term growth depends more on employment expansion than on productivity gains alone.

Policy Implications

- **Inclusive growth strategies:** Focus on labour-intensive sectors such as manufacturing, agro-processing, and services.
- **Skill upgradation:** Aligning productivity gains with employability through education and vocational training.
- **Wage and demand augmentation:** Strengthen minimum wages, rural employment guarantees, and social safety nets.

	<ul style="list-style-type: none"> • Balanced technology adoption: Encourage productivity without excessive labour displacement, using “appropriate technology” models.
Conclusion	Productivity is a vital driver of economic efficiency, but productivity without employment is a hollow growth path. For India, sustainable growth requires harmonising productivity gains with job creation, wage growth, and inclusive demand expansion. Only when productivity is embedded in a broad-based, employment-oriented growth strategy can it act as a true catalyst for long-term development.

Q 30. Analysing Indian States’ macro-fiscal health: Discuss the evolving fiscal trajectories of Indian States in recent decades. How can institutions like the Finance Commission, GST Council, NITI Aayog, and RBI strengthen fiscal sustainability while balancing welfare commitments? (15 marks, 250 words)

Topic – Centre-State Financial Relations

Source: The Hindu

<https://www.thehindu.com/business/Economy/analysing-indian-states-macro-fiscal-health/article70105107.ece>

Introduction	The fiscal health of Indian States is a cornerstone of India’s economic governance. States not only spend more than the Union on welfare but also shape the quality of health, education, and infrastructure delivery. While reforms and buoyant revenues in the 2010s strengthened State finances, the COVID-19 pandemic revealed structural weaknesses: overdependence on transfers, volatile revenue bases, and rising debt burdens. Institutional interventions—by the Finance Commission, GST Council, NITI Aayog, and RBI—are critical in navigating these challenges.
Body	<ul style="list-style-type: none"> • Evolution of States’ Fiscal Health • Uneven Revenue Capacity and Vertical Imbalances • Rising Borrowings and Debt Stress • The Welfare Paradox • Institutional Interventions for Fiscal Sustainability
Conclusion	Indian States face a dual challenge—meeting developmental aspirations while maintaining fiscal sustainability. Institutional mechanisms—the Finance Commission, GST Council, NITI Aayog, and RBI—must act in concert to strengthen fiscal autonomy, improve expenditure quality, and enforce discipline. A cooperative federal framework with transparent fiscal practices will ensure that welfare commitments rest on sustainable revenues rather than fragile borrowings.

UPSC Syllabus	Centre-State Financial Relations
Why was this question asked?	Q. How have the recommendations of the 14th Finance Commission of India enabled the States to improve their fiscal position? (2021)
Introduction	<p>The fiscal health of Indian States is a cornerstone of India’s economic governance. States not only spend more than the Union on welfare but also shape the quality of health, education, and infrastructure delivery. While reforms and buoyant revenues in the 2010s strengthened State finances, the COVID-19 pandemic revealed structural weaknesses: overdependence on transfers, volatile revenue bases, and rising debt burdens. Institutional interventions—by the Finance Commission, GST Council, NITI Aayog, and RBI—are critical in navigating these challenges.</p>
Body	<p>Evolution of States’ Fiscal Health</p> <ul style="list-style-type: none">• In the 2000s, deficits were chronic; reforms like VAT and improved tax administration improved finances in the 2010s.• Some States reported revenue surpluses (e.g., Gujarat, Maharashtra, Uttar Pradesh in 2022–23).• Pandemic shocks reversed this: revenues fell while expenditures surged, forcing widespread borrowing. <p>Uneven Revenue Capacity and Vertical Imbalances</p> <ul style="list-style-type: none">• Maharashtra mobilises ~70% of receipts internally; Arunachal Pradesh only ~9%.• Uttar Pradesh generated only 42% of receipts on its own despite showing surplus, highlighting vertical imbalances.• States’ non-tax revenues are fragile: Kerala’s lotteries (~₹12,000 crore), Odisha’s mining royalties, Telangana’s land sales. These are one-time or volatile streams.• Here, Finance Commission transfers and GST devolution remain lifelines for poorer States. <p>Rising Borrowings and Debt Stress</p> <ul style="list-style-type: none">• Andhra Pradesh tripled borrowings to ₹1.86 lakh crore; Rajasthan quadrupled to ₹1.6 lakh crore by 2022–23.• Debt–GSDP ratios remain alarming in Punjab (45%), Himachal Pradesh (48%), and Bihar (39%).• Comparatively, Odisha (15%) and Gujarat (~20%) showcase better debt management.• The RBI’s annual “State Finances: A Study of Budgets” has warned of hidden liabilities and off-budget borrowings, especially in States offering farm loan waivers and power subsidies.

The Welfare Paradox

- Revenue surpluses often mask under-investment in welfare or reliance on central transfers.
- Populist schemes like free power (Andhra Pradesh, Punjab) or farm waivers defer fiscal burdens via guarantees/SPVs.
- NITI Aayog's State Health Index and SDG Index reveal that surpluses don't always translate into better social outcomes.
- The paradox: a vast welfare state rests on a thin and fragile fiscal base, with risks of unsustainable debt.

Institutional Interventions for Fiscal Sustainability

- Finance Commission: The 15th Finance Commission allocated 41% of divisible pool to States; future Commissions must link grants with fiscal responsibility and capital spending.
- GST Council: Needs to expand tax base, rationalise slabs, and ensure predictable transfers to reduce compensation dependence.
- NITI Aayog: Its indices can be tied to fiscal incentives, nudging States to prioritise quality expenditure over populism.
- RBI Oversight: State-level Debt Management Cells under RBI guidance could monitor contingent liabilities and hidden borrowings.
- FRBM & Fiscal Councils: Updating State-level FRBM Acts with escape clauses and setting up independent Fiscal Councils can ensure transparency and discipline.

Conclusion

Indian States face a dual challenge—meeting developmental aspirations while maintaining fiscal sustainability. Institutional mechanisms—the Finance Commission, GST Council, NITI Aayog, and RBI—must act in concert to strengthen fiscal autonomy, improve expenditure quality, and enforce discipline. A cooperative federal framework with transparent fiscal practices will ensure that welfare commitments rest on sustainable revenues rather than fragile borrowings.

Q31. “What is ‘involution’ that is plaguing the Chinese EV sector? How is China addressing the challenges posed by involution and price wars in its electric vehicle industry?” Discuss. (15 marks, 250 words)

Topic – Electric vehicle sector

Source: The Hindu

<https://www.thehindu.com/business/Industry/what-is-involution-that-is-plaguing-the-chinese-ev-sector-explained/article70053313.ece>

China, which accounts for over sixty per cent of global electric vehicle

Introduction	(EV) sales, is facing a crisis of “involution” (nèijǔǎn). This phenomenon refers to excessive competition where companies engage in unsustainable price wars, reducing prices to levels below production costs and thereby threatening the stability of the entire sector.
Body	<ul style="list-style-type: none"> • Meaning and Origin of “Involution” • Involution in the Chinese EV Sector • External Triggers Intensifying the Problem • Industry and Market Implications • Chinese Government’s Response
Conclusion	The problem of involution in the Chinese EV sector demonstrates the dangers of overcapacity combined with unregulated market rivalry in strategic industries. While the government is attempting to restore order through regulation and consolidation, the long-term challenge lies in balancing innovation, fair competition, and sustainability. For India and other emerging economies, the Chinese experience provides lessons on how to design industrial policy to avoid destructive price wars and to secure the stable growth of their own EV ecosystems.

UPSC Syllabus	Electric vehicle sector
Why was this question asked?	Q. The adoption of electric vehicles is rapidly growing worldwide. How do electric vehicles contribute to reducing carbon emissions and what are the key benefits they offer compared to traditional combustion engine vehicles? [2023]
Introduction	China, which accounts for over sixty per cent of global electric vehicle (EV) sales, is facing a crisis of “involution” (nèijǔǎn). This phenomenon refers to excessive competition where companies engage in unsustainable price wars, reducing prices to levels below production costs and thereby threatening the stability of the entire sector.
Body	<p>Meaning and Origin of “Involution”</p> <ul style="list-style-type: none"> • The term “involution” originates from the Latin word <i>involutio</i>, meaning “to turn inward.” • Anthropologist Clifford Geertz popularised the concept in 1969 in <i>Agricultural Involution</i>, describing how rising effort produced only marginal gains in Indonesia’s rice economy. • In China’s economic context, involution refers to destructive competition where companies cut prices below sustainable levels, leading to stagnation and industry-wide losses. <p>Involution in the Chinese EV Sector</p> <ul style="list-style-type: none"> • The Chinese EV market currently has over one hundred and

twenty manufacturers competing for the same consumer base.

- Companies are forced into price wars where vehicles are sold below production cost in order to capture market share.
- The practice provides temporary sales growth but creates long-term financial stress and undermines sustainability.
- A similar dynamic had previously been observed in China's solar industry, showing a recurring pattern of overcapacity.

External Triggers Intensifying the Problem

- The United States has imposed one hundred per cent tariffs on Chinese EVs under Section 301, effective from 2024.
- The European Union has levied countervailing duties ranging between seventeen and thirty-five per cent in addition to a ten per cent base import duty.
- Turkiye has introduced an additional forty per cent tariff, while Mexico has imposed a fifty per cent tariff to prevent re-routed exports.
- These restrictions have reduced export opportunities and forced Chinese firms to fight for survival within their domestic market, thereby fuelling more intense price wars.

Industry and Market Implications

- The continuation of involution is likely to result in consolidation, with smaller and weaker firms exiting the industry.
- Leading companies such as BYD and Geely are attempting to localise production abroad in countries like Hungary and Turkiye to bypass tariff barriers.
- Chinese companies are increasingly diversifying exports toward emerging markets, although capacity expansion in these regions remains uneven and slow.
- According to the International Energy Agency, Chinese imports accounted for seventy-five per cent of the increase in EV sales in emerging economies outside China in 2024, showing their global dominance despite trade restrictions.

Chinese Government's Response

- In May 2025, the Ministry of Industry and Information Technology announced measures to address disorderly competition in the EV sector.
- In June 2025, the Politburo framed the issue as a "war on price wars" and called for industry stabilisation.
- In July 2025, the government released a draft overhaul of the pricing law aimed at prohibiting below-cost selling and preventing algorithm-driven pricing abuses.

	<ul style="list-style-type: none">In September 2025, President Xi Jinping published an article in <i>Qiushi</i> calling for the curbing of disorderly price competition and for an orderly exit of outdated capacity, signalling a phased restructuring of the industry.
Conclusion	The problem of involution in the Chinese EV sector demonstrates the dangers of overcapacity combined with unregulated market rivalry in strategic industries. While the government is attempting to restore order through regulation and consolidation, the long-term challenge lies in balancing innovation, fair competition, and sustainability. For India and other emerging economies, the Chinese experience provides lessons on how to design industrial policy to avoid destructive price wars and to secure the stable growth of their own EV ecosystems.

Science and Technology

Q 32. Multi-messenger astronomy has been hailed as a new frontier in astrophysics. Explain its significance in understanding the universe, with special reference to India's contributions. (15 marks, 250 words)

Topic – Understanding the universe and multi-messenger astronomy

Source: The Hindu

<https://www.thehindu.com/sci-tech/science/what-is-multi-messenger-astronomy/article70104783.ece>

Introduction	For centuries, astronomy relied almost exclusively on the study of light across different wavelengths — from radio waves to gamma rays. While electromagnetic observations have unlocked many cosmic mysteries, they provide only a partial perspective. Multi-messenger astronomy (MMA) marks a paradigm shift: it integrates multiple cosmic signals such as light, gravitational waves, neutrinos, and cosmic rays, creating a holistic understanding of astrophysical phenomena. This approach transforms astronomy from a one-dimensional discipline into a collaborative, multi-signal science, opening new avenues for fundamental discoveries.
Body	<ul style="list-style-type: none">The Concept of Multi-Messenger AstronomyScientific SignificanceIndia's Contributions to Multi-Messenger AstronomyBroader Implications

Conclusion	<ul style="list-style-type: none"> Challenges Ahead <p>Multi-messenger astronomy represents a transformative step in humankind's quest to understand the universe. By integrating light, gravitational waves, neutrinos, and cosmic rays, it offers a richer, more accurate narrative of cosmic evolution. India, through AstroSat, LIGO-India, GMRT, and INO, has positioned itself at the forefront of this revolution. The way forward lies in expanding scientific infrastructure, fostering international collaboration, and addressing challenges of cost and ecology. In doing so, India can play a pivotal role in shaping the future of this new era of astronomy.</p>
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UPSC Syllabus	Space technology
Why was this question asked?	What do you understand by 'Standard Positioning Systems' and 'Precision Positioning Systems' in the GPS era? Discuss the advantages India perceives from its ambitious IRNSS programme employing just seven satellites. (2015)
Introduction	For centuries, astronomy relied almost exclusively on the study of light across different wavelengths — from radio waves to gamma rays. While electromagnetic observations have unlocked many cosmic mysteries, they provide only a partial perspective. Multi-messenger astronomy (MMA) marks a paradigm shift: it integrates multiple cosmic signals such as light, gravitational waves, neutrinos, and cosmic rays, creating a holistic understanding of astrophysical phenomena. This approach transforms astronomy from a one-dimensional discipline into a collaborative, multi-signal science, opening new avenues for fundamental discoveries.
Body	<p>The Concept of Multi-Messenger Astronomy</p> <ul style="list-style-type: none"> Electromagnetic radiation (light): Reveals surface properties of stars, galaxies, and black holes. Gravitational waves: Ripples in spacetime produced by cataclysmic events like black hole mergers. Neutrinos: Weakly interacting subatomic particles that provide insight into nuclear reactions deep inside stars and supernovae. Cosmic rays: High-energy charged particles offering clues about energetic processes in the universe. Each messenger acts as a complementary probe; together, they provide a three-dimensional picture of the universe's most extreme events. <p>Scientific Significance</p> <ul style="list-style-type: none"> Cross-verification of theories: In 2017, gravitational wave

detection (LIGO) coincided with optical observations of a neutron star merger, confirming theories of heavy-element formation (e.g., gold, platinum).

- **Deeper insights into cosmic engines:** Neutrino detections from supernova SN 1987A revealed stellar core processes invisible to telescopes.
- **High-precision cosmology:** Combining gravitational wave and light signals refines measurements of the Hubble constant, critical for understanding the universe's expansion rate.
- **Astrophysical forensics:** Cosmic rays and gamma-ray bursts mapped alongside gravitational signals help reconstruct violent cosmic explosions.

India's Contributions to Multi-Messenger Astronomy

- **AstroSat (2015):** India's first multi-wavelength space observatory, combining ultraviolet, optical, and multiple X-ray bands to track black holes, neutron stars, and stellar flares.
- **LIGO-India (under construction, Maharashtra):** Will join the global gravitational wave detector network by early 2030s, enhancing triangulation accuracy for cosmic events.
- **Neutrino research:** The proposed **India-based Neutrino Observatory (INO)** in Tamil Nadu aims to detect atmospheric neutrinos, vital for MMA.
- **Ground-based telescopes:** Facilities like the Giant Metrewave Radio Telescope (GMRT) contribute to radio-wave follow-ups of cosmic events.

Broader Implications

- **Technological advancement:** Innovations in detectors, cryogenics, and high-performance computing.
- **Global collaboration:** MMA demands coordinated observation campaigns, integrating data from multiple observatories worldwide.
- **National prestige:** India's leadership in projects like AstroSat and LIGO-India strengthens its role in cutting-edge space science.
- **Capacity building:** Trains next-generation astrophysicists and engineers, aligning with India's space ambitions.

Challenges Ahead

- **Data integration:** Handling and correlating enormous, heterogeneous datasets in real time.
- **High costs:** Building and maintaining gravitational wave observatories and neutrino detectors.
- **Environmental concerns:** Opposition to projects like INO due

	<p>to ecological sensitivities.</p> <ul style="list-style-type: none"> • Global dependencies: MMA success relies on coordinated access to international facilities, which can be geopolitically sensitive.
Conclusion	<p>Multi-messenger astronomy represents a transformative step in humankind's quest to understand the universe. By integrating light, gravitational waves, neutrinos, and cosmic rays, it offers a richer, more accurate narrative of cosmic evolution. India, through AstroSat, LIGO-India, GMRT, and INO, has positioned itself at the forefront of this revolution. The way forward lies in expanding scientific infrastructure, fostering international collaboration, and addressing challenges of cost and ecology. In doing so, India can play a pivotal role in shaping the future of this new era of astronomy.</p>

Q 33. India recently unveiled its first indigenous microprocessor, Vikram 3201. Discuss the significance of semiconductor chips in the modern economy and explain how indigenous capability in chip design and manufacturing can contribute to India's strategic autonomy. (15 marks, 250 words)

Topic – Information technology

Source: The Indian Express

<https://indianexpress.com/article/explained/explained-sci-tech/india-microprocessor-semiconductor-chips-10238040/>

Introduction	<p>Semiconductor chips are the foundation of the digital age, powering devices from smartphones to defence systems. Their control has emerged as a critical determinant of economic strength and geopolitical influence. India's launch of Vikram 3201, its first fully indigenous microprocessor in 2025, marks a strategic step towards self-reliance in this high-value technology domain.</p>
Body	<ul style="list-style-type: none"> • Role of Semiconductors in the Modern Economy • Strategic and Security Significance • India's Indigenous Capability – Vikram 3201 • Economic and Industrial Implications • Challenges and Way Forward
Conclusion	<p>The launch of Vikram 3201 marks more than a scientific milestone; it is a declaration of India's intent to secure its place in the global digital order. By combining indigenous innovation with international collaboration, India can achieve semiconductor self-reliance, strengthen national security, and position itself as a technology leader of the 21st century.</p>

UPSC Syllabus	Emerging Technologies in India
Why was this question asked?	Q. Why is nanotechnology one of the key technologies of the 21st century? Describe the salient features of Indian Government's Mission on Nanoscience and Technology and the scope of its application in the development process of the country. (2016)
Introduction	Semiconductor chips are the foundation of the digital age, powering devices from smartphones to defence systems. Their control has emerged as a critical determinant of economic strength and geopolitical influence. India's launch of Vikram 3201, its first fully indigenous microprocessor in 2025, marks a strategic step towards self-reliance in this high-value technology domain.
Body	<p>Role of Semiconductors in the Modern Economy</p> <ul style="list-style-type: none"> • Semiconductor chips are indispensable in consumer electronics, automobiles, healthcare systems, and communication networks, forming the invisible backbone of modern life. • They drive innovation in artificial intelligence, 5G, Internet of Things (IoT), and renewable energy solutions, linking them directly to productivity and competitiveness. • By enabling automation, efficiency, and data-driven operations, semiconductors contribute to global GDP and are central to Industry 4.0. <p>Strategic and Security Significance</p> <ul style="list-style-type: none"> • Defence applications such as missile guidance, secure communication systems, and electronic warfare are chip-dependent, making them a matter of national security. • Sovereign control over chips reduces cyber vulnerabilities and ensures digital sovereignty in critical infrastructure. • The US–China technology rivalry illustrates how semiconductor supply chains are now instruments of geopolitical power and influence. <p>India's Indigenous Capability – Vikram 3201</p> <ul style="list-style-type: none"> • The Vikram 3201 chip, developed by ISRO's Semiconductor Laboratory, demonstrates India's ability to design and manufacture advanced processors domestically. • It reflects the progress made under the India Semiconductor Mission (2021), which has encouraged chip fabrication units and research hubs. • This milestone shifts India from being a consumer and importer of chips to a potential producer, boosting confidence in technological self-reliance.

Economic and Industrial Implications

- Indigenous production reduces import dependence, with India currently spending over \$25 billion annually on semiconductor imports.
- Domestic chip development stimulates R&D ecosystems, creates high-value employment, and supports the growth of electronic manufacturing clusters.
- It strengthens the “Make in India” initiative by embedding chips into industries like electric vehicles, mobile manufacturing, and consumer durables.

Challenges and Way Forward

- The establishment of semiconductor fabs is capital-intensive and requires advanced technology transfer, areas where India still lags behind.
- A shortage of highly skilled semiconductor engineers and dependence on global raw material supply chains remain critical hurdles.
- India must focus on public-private partnerships, strategic alliances with chip leaders like Taiwan and the US, and incentives to attract global investors.
- Building an end-to-end semiconductor ecosystem — from raw materials and design to packaging and testing — will be essential for sustainable progress.

Conclusion

The launch of Vikram 3201 marks more than a scientific milestone; it is a declaration of India’s intent to secure its place in the global digital order. By combining indigenous innovation with international collaboration, India can achieve semiconductor self-reliance, strengthen national security, and position itself as a technology leader of the 21st century.

Q34. India is exploring the use of Small Modular Reactors (SMRs) to power its AI-driven data centre boom. Discuss the prospects, challenges, and policy implications of such an initiative. (15 marks, 250 words)

Topic – Small Modular Reactors and AI driven data centre

Source: The Indian Express

<https://indianexpress.com/article/business/eyeing-ai-data-centre-boom-india-open-to-encouraging-smr-led-nuclear-push-10265508/>

Introduction

Artificial Intelligence (AI) applications are driving a massive surge in global data centre capacity, leading to exponential energy demand. India’s \$10 billion data centre market is projected to nearly double by

	2027, with electricity costs forming nearly 65% of operational expenditure. In this context, the Indian government is considering the use of nuclear energy—specifically Small Modular Reactors (SMRs)—to provide clean, round-the-clock power. This aligns with global trends where tech majors like Google and Microsoft have partnered with nuclear plants to ensure sustainable AI infrastructure.
Body	<ul style="list-style-type: none"> • Rising Energy Needs of AI and Data Centres • Role of SMRs in India’s Energy Mix • Economic and Strategic Advantages • Policy and Legal Challenges • Way Forward: A Balanced Approach
Conclusion	India’s openness to SMR-led nuclear energy for AI data centres reflects a pragmatic recognition of the energy–technology nexus in the 21st century. While challenges of liability, safety, and public acceptance persist, SMRs provide an opportunity to align digital growth with climate commitments. If pursued with caution and reform, India could not only secure sustainable AI infrastructure but also emerge as a key player in the global nuclear technology value chain.

UPSC Syllabus	Artificial Intelligence and Energy needs
Why was this question asked?	Q. Give an account of the growth and development of nuclear science and technology in India. What is the advantage of fast breeder reactor programme in India? (2017)
Introduction	Artificial Intelligence (AI) applications are driving a massive surge in global data centre capacity, leading to exponential energy demand. India’s \$10 billion data centre market is projected to nearly double by 2027, with electricity costs forming nearly 65% of operational expenditure. In this context, the Indian government is considering the use of nuclear energy—specifically Small Modular Reactors (SMRs)—to provide clean, round-the-clock power. This aligns with global trends where tech majors like Google and Microsoft have partnered with nuclear plants to ensure sustainable AI infrastructure.
Body	<p>Rising Energy Needs of AI and Data Centres</p> <ul style="list-style-type: none"> • The International Energy Agency (IEA) projects data centre power demand could double by 2026, straining India’s renewable-dependent grid. • Data centres are high capital–low employment industries, but vital for digital sovereignty and AI-led growth. • Traditional renewable sources face intermittency; nuclear offers

baseload stability critical for AI and machine learning applications that run continuously.

Role of SMRs in India's Energy Mix

- **Small Modular Reactors** (30–300 MWe units) offer flexibility, modularity, and lower upfront cost compared to conventional large reactors.
- SMRs can be deployed **near data clusters**, reducing transmission losses.
- Global examples: Russia's **Akademik Lomonosov** (35 MWe x 2) and China's **HTR-PM** have demonstrated feasibility.
- For India, SMRs fit into its dual goals of **clean energy transition** and **technology leadership in nuclear supply chains**.

Economic and Strategic Advantages

- Reduces dependence on fossil fuels for high-tech growth sectors.
- Enhances **energy security**, shielding data centres from grid volatility.
- Can position India as a **nuclear technology exporter**, leveraging Indo–US civil nuclear cooperation.
- Supports India's **net-zero commitments** and strengthens its bargaining power in global climate negotiations.

Policy and Legal Challenges

- **Civil Liability for Nuclear Damage Act (2010)** deters foreign suppliers due to operator's right of recourse.
- India's nuclear sector is state-controlled; private participation in plant operations remains restricted.
- Legislative reforms—such as liability easing and permitting **minority foreign equity** in nuclear projects—are politically sensitive and procedurally difficult.
- Public concerns over **safety, waste management, and accident risks** remain strong.

Way Forward: A Balanced Approach

- Gradual reforms: amend liability law to attract global SMR suppliers while ensuring strong **safety norms and compensation frameworks**.
- Encourage **public–private partnerships** in SMR deployment, especially near digital and industrial hubs.
- Integrate SMRs into India's **national data centre policy** to offer stable, clean power incentives.
- Parallel investments in **renewables + storage** to avoid over-

	<p>dependence on nuclear alone.</p> <ul style="list-style-type: none"> • Position SMR collaboration as part of Indo-US trade and technology diplomacy, linking digital economy with clean energy transition.
Conclusion	<p>India's openness to SMR-led nuclear energy for AI data centres reflects a pragmatic recognition of the energy-technology nexus in the 21st century. While challenges of liability, safety, and public acceptance persist, SMRs provide an opportunity to align digital growth with climate commitments. If pursued with caution and reform, India could not only secure sustainable AI infrastructure but also emerge as a key player in the global nuclear technology value chain.</p>

Q 35. India's expanding satellite fleet faces growing risks from debris, collisions, and hostile actions. How is India planning to safeguard its space assets? (15 marks, 250 words)

Topic – Space technology

Source: The Hindu

<https://www.thehindu.com/sci-tech/science/how-is-india-planning-to-protect-its-satellites-in-space/article70080083.ece>

Introduction	<p>Satellites today form the invisible infrastructure of modern life. They power navigation, communication, weather forecasting, e-governance, banking transactions, disaster management, and military surveillance. For India, with over 50 operational satellites and ambitious plans for expansion, safeguarding these assets is critical. Threats range from space debris and natural phenomena to cyberattacks and hostile manoeuvres by rival powers. Recognising these risks, India has initiated a multi-layered strategy to ensure space security.</p>
Body	<ul style="list-style-type: none"> • Space Situational Awareness (SSA) and Collision Avoidance • Guarding against Physical and Natural Threats • Cybersecurity and Anti-Jamming Measures • Policy, Regulation, and International Cooperation • Future Surveillance and Strategic Assets •
Conclusion	<p>India's satellite protection strategy is evolving into a comprehensive, multi-dimensional framework. From SSA and collision avoidance to cybersecurity, natural hazard preparedness, international rule-making, and futuristic "bodyguard" satellites, the measures reflect both defensive prudence and strategic foresight. While challenges remain — such as ageing NavIC satellites and the need for continuous monitoring capacity — India's proactive investments and policies signal its</p>

determination to secure its growing presence in space. Protecting satellites is no longer a technical task alone; it is a strategic imperative central to India's economic security, national defence, and global standing.

UPSC Syllabus	Satellite technology
Why was this question asked?	Q. India has achieved remarkable successes in unmanned space missions including the Chandrayaan and Mars Orbiter Mission, but has not ventured into manned space mission, both in terms of technology and logistics? Explain critically. (2017)
Introduction	Satellites today form the invisible infrastructure of modern life. They power navigation, communication, weather forecasting, e-governance, banking transactions, disaster management, and military surveillance. For India, with over 50 operational satellites and ambitious plans for expansion, safeguarding these assets is critical. Threats range from space debris and natural phenomena to cyberattacks and hostile manoeuvres by rival powers. Recognising these risks, India has initiated a multi-layered strategy to ensure space security.
Body	<p>Space Situational Awareness (SSA) and Collision Avoidance</p> <ul style="list-style-type: none"> • India has established the <i>Indian Space Situational Awareness and Management (IS4OM)</i> centre in Bengaluru to monitor satellites and issue collision warnings. • <i>Project NETRA</i> aims to build radars and telescopes across the country for continuous tracking of debris and satellites. • Already, Indian satellites carried out more than 10 collision-avoidance manoeuvres in 2023 alone. • To strengthen this layer, ISRO is considering <i>LiDAR-based satellites</i> and the concept of "<i>bodyguard satellites</i>" that can monitor suspicious manoeuvres by foreign spacecraft and shield critical Indian satellites. <p>Guarding against Physical and Natural Threats</p> <ul style="list-style-type: none"> • The orbital environment itself poses dangers. A screw-sized debris object travelling at 28,000 km/h can destroy a satellite. • India's <i>Multi-Object Tracking Radar</i> at Sriharikota provides partial coverage, with more stations planned. • Additionally, natural threats like solar storms can disrupt power systems and communications. • India's <i>Aditya-L1</i> mission at the Lagrange point provides real-time data on solar activity, enabling early warnings to place satellites in safe mode or adjust orbits.

- India has also declared its commitment to *Debris-Free Space Missions by 2030*, focusing on controlled re-entry and minimising space junk.

Cybersecurity and Anti-Jamming Measures

- The digital domain poses equal threats, as ground stations and user terminals are often the weakest link.
- To counter spoofing and jamming, ISRO is testing *Navigation Message Authentication (NMA)* for the *NavIC* system. Defence satellites are believed to employ anti-jamming methods like spread-spectrum signals and beam-steering antennas.
- On the policy front, *CERT-In guidelines (2025)* mandate strong encryption, network segmentation, secure credentials, and incident reporting.
- These measures extend to private players through *IN-SPACe licensing*, ensuring uniform cybersecurity practices across India's emerging space economy.

Policy, Regulation, and International Cooperation

- India recognises that space security requires international coordination.
- It actively engages in forums like the *UN Committee on the Peaceful Uses of Outer Space (COPUOS)* and hosted the *Inter-Agency Debris Coordination Committee (IADC)* in 2024. These platforms push for global norms of responsible behaviour in orbit.
- Domestically, regulatory mechanisms through *IN-SPACe* mandate compliance with safety and security standards.
- India's approach thus combines national preparedness with active diplomacy to shape rules of the road in outer space.

Future Surveillance and Strategic Assets

- The Indian government has sanctioned a ₹27,000-crore programme to launch 52 new surveillance satellites by 2026, aimed at strengthening earth observation and national security.
- Start-ups are also contributing to *space-based SSA satellites* that track debris and monitor space objects.
- The prospective *bodyguard satellites* will further enhance deterrence by accompanying and protecting valuable space assets, reflecting India's shift from passive monitoring to active defence of its orbital infrastructure.

Conclusion

India's satellite protection strategy is evolving into a comprehensive, multi-dimensional framework. From SSA and collision avoidance to cybersecurity, natural hazard preparedness, international rule-making, and futuristic "bodyguard" satellites, the measures reflect both

defensive prudence and strategic foresight. While challenges remain — such as ageing NavIC satellites and the need for continuous monitoring capacity — India's proactive investments and policies signal its determination to secure its growing presence in space. Protecting satellites is no longer a technical task alone; it is a strategic imperative central to India's economic security, national defence, and global standing.

Ecology and Environment

Q 36. Why should Indians care about noise pollution in cities? Examine the health, social, and governance challenges posed by urban noise, and suggest a multi-pronged strategy for mitigation. (15 marks, 250 words)

Topic – Noise Pollution in India

Source: The Indian Express

<https://indianexpress.com/article/explained/explained-health/explained-too-loud-to-ignore-why-indians-should-care-about-noise-pollution-in-cities-10265691/>

Introduction	Noise pollution, though often treated as a peripheral nuisance, has emerged as a significant urban health and governance challenge in India. Legally, it is recognized as an air pollutant under the Air (Prevention and Control of Pollution) Act, 1981. Medically, excessive noise contributes to hypertension, stress disorders, sleep disruption, and cognitive decline. Yet, despite its serious implications, systematic monitoring and policy attention remain inadequate, making it a silent but severe crisis in Indian cities.
Body	<ul style="list-style-type: none">• Health Implications of Noise Pollution• Systemic and Governance Failures• Social and Equity Dimensions• Policy and Urban Planning Gaps• Way Forward: Multi-Pronged Strategy
Conclusion	Noise pollution in Indian cities is no longer a minor irritant but a public health and social justice crisis. By treating noise with the seriousness accorded to air and water pollution — through robust monitoring, integrated governance, and inclusive urban planning — India can reclaim the right to quiet as a basic condition of well-being. The lesson from air pollution is clear: neglect amplifies harm; proactive action can save lives and make cities healthier and more equitable.

UPSC Syllabus	Noise Pollution in India
Why was this question asked?	Q. Enumerate the National Water Policy of India. Taking river Ganges as an example, discuss the strategies which may be adopted for river water pollution control and management. What are the legal provisions of management and handling of hazardous wastes in India? [2013]
Introduction	Noise pollution, though often treated as a peripheral nuisance, has emerged as a significant urban health and governance challenge in India. Legally, it is recognized as an air pollutant under the Air (Prevention and Control of Pollution) Act, 1981. Medically, excessive noise contributes to hypertension, stress disorders, sleep disruption, and cognitive decline. Yet, despite its serious implications, systematic monitoring and policy attention remain inadequate, making it a silent but severe crisis in Indian cities.
Body	<p>Health Implications of Noise Pollution</p> <ul style="list-style-type: none"> • The World Health Organization (WHO) prescribes safe residential daytime exposure at 55 dB(A), while India’s Noise Rules, 2000, set 55 dB for day and 45 dB at night. • However, Indian traffic corridors often exceed 70 dB(A), exposing millions to unsafe levels. • Chronic exposure is linked to cardiovascular diseases, stress, reduced work efficiency, impaired learning in children, and premature mortality. • Vulnerable groups — street vendors, traffic police, construction workers, and slum residents — face the harshest impacts due to occupational and residential exposure. <p>Systemic and Governance Failures</p> <ul style="list-style-type: none"> • Sparse monitoring: Unlike air pollution, India lacks real-time noise mapping; data remains sporadic and reactive. • Fragmented jurisdiction: Pollution control boards, municipal bodies, and police share responsibility but lack coordination. • Weak enforcement: Cultural tolerance of loud practices (honking, firecrackers, loudspeakers) and limited punitive measures reduce deterrence. • Symbolic interventions such as temporary honking bans during festivals fail to address structural drivers. <p>Social and Equity Dimensions</p> <ul style="list-style-type: none"> • The burden is inequitably distributed: the poor and informal workers live and work in the noisiest environments.

- Wealthier citizens can afford **soundproofing, quieter neighborhoods, or private vehicles**, while vulnerable groups face daily exposure.
- Educational institutions and hospitals near high-noise zones suffer from reduced quality of learning and care, reinforcing cycles of disadvantage.

Policy and Urban Planning Gaps

- Urban planning rarely integrates noise considerations into **zoning, land use, or transport design**.
- **Green buffers** such as trees, parks, and noise barriers are underutilized despite their proven effectiveness.
- Transport policies prioritize vehicular growth over **quiet mobility options** like cycling, walking, and electric vehicles.
- Health surveys and epidemiological studies seldom **track noise exposure** systematically, leaving policymakers blind to its full impact.

Way Forward: Multi-Pronged Strategy

- **Strengthen monitoring:** Deploy low-cost sensors and machine-learning tools to map real-time soundscapes.
- **Integrated governance:** Create dedicated noise management units bringing together municipalities, pollution boards, and traffic police.
- **Urban design solutions:** Promote zoning reforms, build green buffers, and incentivize quieter public transport fleets.
- **Legal and enforcement reforms:** Enforce Noise Pollution Rules, 2000 with clear penalties, and mandate noise audits for construction and industries.
- **Community engagement:** Conduct awareness campaigns, collaborate with religious/community leaders, and promote cultural shifts toward quieter celebrations.
- **Equity focus:** Prioritize schools, hospitals, and informal settlements in mitigation efforts to ensure the right to quiet is universal.

Conclusion

Noise pollution in Indian cities is no longer a minor irritant but a public health and social justice crisis. By treating noise with the seriousness accorded to air and water pollution — through robust monitoring, integrated governance, and inclusive urban planning — India can reclaim the right to quiet as a basic condition of well-being. The lesson from air pollution is clear: neglect amplifies harm; proactive action can save lives and make cities healthier and more equitable.

Q37. The recent survey of saltwater crocodiles in the Sundarban Biosphere Reserve highlights both the achievements and the gaps in India's conservation policy." Discuss. (15 marks, 250 words)

Topic – India's conservation policy

Source: The Hindu

<https://www.thehindu.com/opinion/editorial/silver-of-hope-on-survey-of-saltwater-crocodiles-conservation/article70048575.ece>

Introduction	The recovery of the saltwater crocodile (<i>Crocodylus porosus</i>) in the Sundarban Biosphere Reserve marks a turning point in India's conservation journey. Traditionally overshadowed by the tiger and the elephant, this reptile was once on the verge of local extinction. Yet, the recent 2025 survey has shown a rise in both numbers and demographic diversity, signalling not just ecological success but also a gradual broadening of India's conservation vision.
Body	<ul style="list-style-type: none"> • Achievements of Conservation Policy • Moving Beyond Charismatic Species • Gaps and Challenges • Policy Framework and Global Linkages • Towards an Inclusive Conservation Vision
Conclusion	The Sundarban crocodile survey is more than a species success story; it is a reminder that India's conservation must move beyond a megafauna-centric, reactive model. A richer, more inclusive vision—one that integrates climate resilience, ecological roles, and neglected species—is essential for the long-term health of ecosystems. Protecting crocodiles alongside tigers and elephants is not just desirable, but necessary for safeguarding India's biodiversity heritage.

UPSC Syllabus	India's conservation policy
Why was this question asked?	Q. How does biodiversity vary in India? How is the Biological Diversity Act, 2002 helpful in conservation of flora and fauna? [2018]
Introduction	The recovery of the saltwater crocodile (<i>Crocodylus porosus</i>) in the Sundarban Biosphere Reserve marks a turning point in India's conservation journey. Traditionally overshadowed by the tiger and the elephant, this reptile was once on the verge of local extinction. Yet, the recent 2025 survey has shown a rise in both numbers and demographic diversity, signalling not just ecological success but also a gradual broadening of India's conservation vision.

Body

Achievements of Conservation Policy

- The Wildlife (Protection) Act, 1972 granted saltwater crocodiles Schedule I protection, placing them at the highest level of statutory security.
- Projects such as the Bhagabatpur Crocodile Project in West Bengal and the Crocodile Conservation Project in Odisha since 1975 combined captive breeding, reintroduction, and habitat protection to revive populations.
- The improved survival of juveniles in the Sundarbans indicates that breeding grounds and aquatic habitats still retain their ecological quality.
- As apex predators, crocodiles regulate prey populations and remove carcasses, thereby maintaining functional food webs and improving mangrove health.

Moving Beyond Charismatic Species

- For decades, conservation attention and funding were directed mainly at charismatic species such as the tiger, elephant, and lion.
- The revival of crocodile populations demonstrates that non-charismatic species can also recover if legal protection and targeted institutional investment are provided.
- This shift highlights that conservation success does not depend on public popularity but on sustained ecological and policy commitments.

Gaps and Challenges

- Climate change threatens crocodile habitats through rising sea levels, salinity intrusion, and increasingly frequent cyclones.
- Expanding aquaculture, human settlements, and erosion are fragmenting nesting habitats and reducing viable breeding sites.
- Crocodile attacks on local communities generate human-wildlife conflict and weaken public support for conservation.
- Current wildlife laws and policies remain largely reactive and do not anticipate future climate-linked or habitat-related threats.
- Other reptiles and amphibians remain neglected in mainstream conservation, despite facing similar ecological pressures.

Policy Framework and Global Linkages

- The National Biodiversity Action Plan (2008) stresses ecosystem-level protection and provides an umbrella for species recovery.
- The National Action Plan on Climate Change (2008) offers an opportunity to integrate climate resilience into biodiversity

	<p>conservation.</p> <ul style="list-style-type: none">• The Sundarbans' designation as a Ramsar wetland under the 1971 Convention obliges India to conserve its ecological character.• However, species-specific recovery plans and proactive measures under the Wildlife (Protection) Act are still underdeveloped and underfunded. <p>Towards an Inclusive Conservation Vision</p> <ul style="list-style-type: none">• The recovery of saltwater crocodiles was not driven by their popularity but by deliberate state-led investment in captive breeding and habitat protection.• Similar proactive recovery plans must now be extended to amphibians, reptiles, and other non-charismatic species facing climate and habitat risks.• Climate adaptation strategies such as identifying climate refugia, investing in assisted breeding, and restoring salinity-resilient habitats are urgently required.• Conservation must also involve local communities through awareness campaigns, livelihood support, and eco-tourism to reduce hostility and encourage participation.
<p>Conclusion</p>	<p>The Sundarban crocodile survey is more than a species success story; it is a reminder that India's conservation must move beyond a megafauna-centric, reactive model. A richer, more inclusive vision—one that integrates climate resilience, ecological roles, and neglected species—is essential for the long-term health of ecosystems. Protecting crocodiles alongside tigers and elephants is not just desirable, but necessary for safeguarding India's biodiversity heritage.</p>

Q38. The 2025 Nature study systematically attributed hundreds of global heatwaves to the emissions of “carbon majors”. In this context, analyse the scientific findings of the study and discuss their implications for the principle of climate justice, with special reference to India. (15 marks, 250 words)

Topic – Global heatwaves

Source: The Indian Express

https://indianexpress.com/article/explained/explained-climate/fossil-fuel-companies-heatwaves-10253651/?ref=explained_pg

<p>Introduction</p>	<p>A recent study published in Nature (2025) has directly linked carbon emissions from fossil fuel companies to 213 heatwaves between 2000–2023. The research shows that corporate emissions have contributed nearly half of the increase in heatwave intensity since pre-industrial</p>
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	times, making many lethal heatwaves far more likely. These findings strengthen the case for climate accountability and reparations.
Body	<ul style="list-style-type: none"> • Key Findings of the Study • Human and Ecological Consequences • Legal and Climate Justice Dimensions • Implications for Global Climate Governance • India's Context and Challenges
Conclusion	The new study shows that fossil fuel emissions can be directly linked to deadly heatwaves, making accountability traceable. For global governance, it marks a turning point in climate litigation, reparations, and corporate responsibility. For India, facing rising heat-related deaths and economic stress, the findings reinforce the urgency of climate justice, robust adaptation measures, and stronger global liability frameworks.

UPSC Syllabus	Climate change
Why was this question asked?	Q. Discuss global warming and mention its effects on the global climate. Explain the control measures to bring down the level of greenhouse gases which cause global warming, in the light of the Kyoto Protocol, 1997. [2022]
Introduction	A recent study published in Nature (2025) has directly linked carbon emissions from fossil fuel companies to 213 heatwaves between 2000–2023. The research shows that corporate emissions have contributed nearly half of the increase in heatwave intensity since pre-industrial times, making many lethal heatwaves far more likely. These findings strengthen the case for climate accountability and reparations.
Body	<p>Key Findings of the Study</p> <ul style="list-style-type: none"> • The study analysed 213 heatwaves worldwide between 2000 and 2023. • Heatwaves between 2000–2009 were 20 times more likely, and between 2010–2019 were 200 times more likely due to global warming. • Out of these events, 55 heatwaves became at least 10,000 times more likely because of rising temperatures. • Heatwaves in 2000–2009 were 1.4°C hotter, and in 2010–2019, 1.7°C hotter due to climate change. <p>Human and Ecological Consequences</p> <ul style="list-style-type: none"> • The 2003 European heatwave killed around 30,000 people; the 2021 Pacific Northwest heat dome caused hundreds of deaths.

- In India, the **2023 Balliya heatwave in Uttar Pradesh killed 68 people**, exemplifying local vulnerabilities.
- According to WMO, nearly **4,89,000 people die annually from heat exposure**, with a rising share linked to climate change-induced heatwaves.

Legal and Climate Justice Dimensions

- The study offers **scientific evidence** for courts to hold polluting companies accountable.
- The **International Court of Justice (ICJ)** recently ruled that countries and companies may be held responsible for climate damages, opening avenues for reparations.
- Campaigns like **Make Polluters Pay** emphasize that fossil fuel producers' emissions cause identifiable human suffering.

Implications for Global Climate Governance

- The study strengthens the argument for **loss and damage financing** under UNFCCC and COP negotiations.
- It highlights the need for **corporate liability frameworks**, beyond state-level climate responsibility.
- Attribution science could reshape international law, creating pressure on carbon majors to compensate vulnerable communities.

India's Context and Challenges

- India is among the most **heatwave-prone countries**, with rising urban heat island effects and rural livelihood losses.
- Extreme heat threatens **food security, labour productivity, and public health**, with disproportionate impacts on the poor.
- India advocates for **climate justice**

Conclusion

The new study shows that fossil fuel emissions can be directly linked to deadly heatwaves, making accountability traceable. For global governance, it marks a turning point in climate litigation, reparations, and corporate responsibility. For India, facing rising heat-related deaths and economic stress, the findings reinforce the urgency of climate justice, robust adaptation measures, and stronger global liability frameworks.

Q 39. “Stubble burning in North India continues to worsen air quality despite several institutional interventions. Discuss the need for a holistic and multi-pronged approach to tackle the issue.” (15 marks, 250 words)

Topic – Air pollution

Source: The Hindu

<https://www.thehindu.com/opinion/editorial/holistic-approach-on-dealing-with-north-indias-stubble-burning/article70065958.ece>

Introduction	Stubble burning in Punjab, Haryana, Uttar Pradesh, and parts of Rajasthan has emerged as a recurring environmental and health crisis. Each year, post-harvest agricultural residue is burnt to prepare fields for rabi sowing, releasing toxic pollutants and contributing to severe air pollution episodes in North India, particularly in the National Capital Region (NCR). Despite the establishment of the Commission for Air Quality Management (CAQM – Commission for Air Quality Management in NCR and Adjoining Areas) and judicial oversight, the persistence of farm fires highlights gaps in policy, enforcement, and farmer support systems. A holistic, multi-pronged approach is therefore necessary.
Body	<ul style="list-style-type: none"> • Structural Causes of Stubble Burning • Institutional and Policy Gaps • Environmental and Health Consequences • Towards a Holistic Strategy • Governance, Enforcement, and Awareness
Conclusion	Stubble burning is not merely a law-and-order problem but a manifestation of deeper structural and economic issues in Indian agriculture. Criminalizing farmers without addressing systemic constraints would only aggravate rural distress. A holistic approach combining policy reform, technological innovation, economic support, institutional strengthening (CAQM), and cooperative federalism is essential to sustainably resolve the crisis while ensuring both environmental protection and farmer welfare.

UPSC Syllabus	Air pollution
Why was this question asked?	Q. Describe the key points of the revised Global Air Quality Guidelines (AQGs) recently released by the World Health Organisation (WHO). How are these different from its last update in 2005? What changes in India’s National Clean Air Programme are required to achieve these revised standards? [2021]
Introduction	Stubble burning in Punjab, Haryana, Uttar Pradesh, and parts of Rajasthan has emerged as a recurring environmental and health crisis.

Each year, post-harvest agricultural residue is burnt to prepare fields for rabi sowing, releasing toxic pollutants and contributing to severe air pollution episodes in North India, particularly in the National Capital Region (NCR). Despite the establishment of the Commission for Air Quality Management (CAQM – Commission for Air Quality Management in NCR and Adjoining Areas) and judicial oversight, the persistence of farm fires highlights gaps in policy, enforcement, and farmer support systems. A holistic, multi-pronged approach is therefore necessary.

Body

Structural Causes of Stubble Burning

- **Narrow sowing windows** due to the paddy–wheat crop cycle compel farmers to adopt burning as a quick, low-cost method.
- High cost of **residue management equipment** (Happy Seeder, Super Straw Management System) limits adoption among debt-ridden small and marginal farmers.
- Weak procurement diversification policies continue to incentivize **paddy cultivation**, despite its ecological costs such as groundwater depletion and residue surplus.

Institutional and Policy Gaps

- The **CAQM**, created under the 2021 Act as a statutory body with powers to coordinate across states, has failed to exercise its mandate independently of political pressures.
- Half-hearted enforcement: penalties and restrictions are inconsistently applied across states.
- Lack of transparency in monitoring: for instance, reports of **underreporting of farm fires by state governments** reduce accountability and credibility.

Environmental and Health Consequences

- Contribution to **winter smog**: particulate matter (PM_{2.5} and PM₁₀) levels surge in Delhi-NCR during October–November.
- Public health impact: increases in **respiratory diseases** such as asthma, COPD, and cardiovascular ailments.
- Climate dimension: releases greenhouse gases like **carbon dioxide, methane, and nitrous oxide**, worsening climate change.

Towards a Holistic Strategy

- **Economic incentives**: Subsidies and direct cash transfers for adopting residue management machines.
- **Crop diversification**: Encourage maize, pulses, and oilseeds through assured procurement and MSP (Minimum Support Price) support.

	<ul style="list-style-type: none"> • Technological innovations: Use of bio-decomposer solutions, ethanol production from stubble, and decentralized biomass power plants. • Community-led models: Farmer cooperatives to share machinery and reduce costs at the village level. <p>Governance, Enforcement, and Awareness</p> <ul style="list-style-type: none"> • Strengthen CAQM with independent decision-making powers and greater financial autonomy. • Transparent, real-time satellite monitoring of stubble fires with publicly available data to build public trust. • Awareness campaigns highlighting long-term health hazards for farming communities themselves. • Promote cooperative federalism – coordinated action between Centre, States, judiciary, and local panchayats.
Conclusion	<p>Stubble burning is not merely a law-and-order problem but a manifestation of deeper structural and economic issues in Indian agriculture. Criminalizing farmers without addressing systemic constraints would only aggravate rural distress. A holistic approach combining policy reform, technological innovation, economic support, institutional strengthening (CAQM), and cooperative federalism is essential to sustainably resolve the crisis while ensuring both environmental protection and farmer welfare.</p>

Q40. The Centre's decision to push for uranium mining in Meghalaya, despite local opposition, highlights the tension between resource extraction and community rights. Discuss the legal, environmental, and socio-political issues involved. Suggest a way forward. (15 marks, 250 words)

Topic – Resource extraction and tribal communities

Source: The Hindu

<https://www.thehindu.com/opinion/editorial/uranium-unrest-on-uranium-mining-in-meghalaya/article70077165.ece>

Introduction	<p>Uranium is a strategic mineral critical for India's nuclear energy program and national security. The recent exemption by the Union Environment Ministry allowing uranium mining without public consultation in Meghalaya has triggered widespread protests by Khasi groups. This issue reflects the larger debate between resource extraction for national development and constitutional protections for tribal communities.</p>
Body	<ul style="list-style-type: none"> • Legal and Policy Context • Judicial Precedents and Global Norms • Environmental and Social Concerns

	<ul style="list-style-type: none"> Way Forward
Conclusion	<p>The uranium mining controversy in Meghalaya demonstrates that national security cannot override community rights and environmental safeguards.</p> <p>Upholding constitutional protections, judicial precedents, and democratic dialogue is vital to balance resource needs with social justice. Only through consent-based development can India ensure both energy security and community trust.</p>

UPSC Syllabus	Sustainable Development and Tribal Development
Why was this question asked?	Q. What are the consequences of Illegal mining? Discuss the Ministry of Environment and Forest's concept of GO AND NO-GO zones for coal mining sector [2013]
Introduction	Uranium is a strategic mineral critical for India's nuclear energy program and national security. The recent exemption by the Union Environment Ministry allowing uranium mining without public consultation in Meghalaya has triggered widespread protests by Khasi groups. This issue reflects the larger debate between resource extraction for national development and constitutional protections for tribal communities.
Body	<p>Legal and Policy Context</p> <ul style="list-style-type: none"> Uranium mining is governed by the Atomic Energy Act, 1962, which empowers the Centre to control atomic minerals. The Environment Protection Act, 1986 mandates Environmental Impact Assessments (EIA) and public consultations. The new Office Memorandum (OM) exempting atomic and critical minerals from consultation dilutes these safeguards. Constitutional protections under the Fifth and Sixth Schedules give tribal areas special autonomy in resource governance. <p>Judicial Precedents and Global Norms</p> <ul style="list-style-type: none"> The Supreme Court's Niyamgiri judgment (2013) upheld the principle of free, prior, and informed consent (FPIC) for tribal communities in resource projects. Internationally, the UN Declaration on the Rights of Indigenous Peoples (UNDRIP) reinforces FPIC as a global standard. Meghalaya's Khasi Hills Autonomous District Council can invoke its Sixth Schedule powers to restrict uranium mining on

	<p>community lands.</p> <p>Environmental and Social Concerns</p> <ul style="list-style-type: none">• Uranium mining is highly polluting, producing radioactive waste and irreversible ecological damage.• In Jharkhand's Singhbhum district, decades of uranium operations have been linked with radiation exposure, water contamination, and loss of livelihoods.• Communities fear cultural dislocation, land alienation, and being reduced to mere resource frontiers for national projects. <p>Way Forward</p> <ul style="list-style-type: none">• The government should explore alternative uranium sources in less ecologically sensitive areas or enhance nuclear fuel imports under bilateral agreements.• Dialogue-based engagement with local communities is essential, respecting Sixth Schedule institutions and constitutional rights.• Energy policy should diversify into renewables, reducing reliance on uranium as the sole pathway to energy security.
<p>Conclusion</p>	<p>The uranium mining controversy in Meghalaya demonstrates that national security cannot override community rights and environmental safeguards.</p> <p>Upholding constitutional protections, judicial precedents, and democratic dialogue is vital to balance resource needs with social justice. Only through consent-based development can India ensure both energy security and community trust.</p>

Disaster Management

Q41. "Mini-cloudbursts are on the rise in India, as per IMD. What are cloudbursts and mini-cloudbursts? Discuss their background, causes, challenges posed, and evaluate India's policy and institutional response to extreme rainfall events." (15 marks, 250 words)

Topic – Cloudbursts

Source: The Hindu

<https://www.thehindu.com/news/national/august-rainfall-in-northwest-india-highest-since-2001-predicts-heavy-rainfall-in-september-imd/article69996177.ece>

Introduction Cloudbursts are among the most devastating weather phenomena affecting India. The India Meteorological Department (IMD) defines a

	<p>cloudburst as rainfall of 10 centimetres or more within an hour over an area of 20–30 square kilometres. Such events often lead to flash floods, landslides, and large-scale destruction in fragile regions. According to IMD’s recent observation, while large cloudbursts have not shown an increasing trend, “mini-cloudbursts,” defined as rainfall of 5 centimetres or more within an hour, are becoming more frequent. Government reports such as the National Disaster Management Authority (NDMA) Guidelines on Urban Flooding (2010) and the National Action Plan on Climate Change (NAPCC, 2008) have already highlighted the risks of such extreme rainfall events.</p>
Body	<ul style="list-style-type: none"> • Background and Concept • Drivers of Rising Frequency • Challenges Posed • Government and Institutional Response • Way Forward
Conclusion	<p>The IMD’s observation regarding the rise in mini-cloudbursts highlights India’s growing vulnerability to extreme weather events in the era of climate change. While institutional responses are visible in the form of NDMA guidelines, MoES monitoring reports, and IMD forecasting improvements, the gap lies in implementation and local preparedness. Building climate-resilient infrastructure, strengthening early warning systems, and empowering communities are crucial for safeguarding lives and livelihoods in a monsoon-dependent country like India.</p>

UPSC Syllabus	Disaster Management- Cloudbursts
Why was this question asked?	Q. Explain the mechanism and occurrence of cloudburst in the context of the Indian subcontinent. Discuss two recent examples. [2022]
Introduction	<p>Cloudbursts are among the most devastating weather phenomena affecting India. The India Meteorological Department (IMD) defines a cloudburst as rainfall of 10 centimetres or more within an hour over an area of 20–30 square kilometres. Such events often lead to flash floods, landslides, and large-scale destruction in fragile regions. According to IMD’s recent observation, while large cloudbursts have not shown an increasing trend, “mini-cloudbursts,” defined as rainfall of 5 centimetres or more within an hour, are becoming more frequent. Government reports such as the National Disaster Management Authority (NDMA) Guidelines on Urban Flooding (2010) and the National Action Plan on Climate Change (NAPCC, 2008) have already highlighted the risks of such extreme rainfall events.</p>

Body

Background and Concept

- A cloudburst is a sudden and highly localized rainfall event that is extremely difficult to forecast in advance.
- Mini-cloudbursts, although less intense than cloudbursts, are now more frequent and cause similar destruction in vulnerable areas.
- A study by IMD and the *Indian Institute of Tropical Meteorology (IITM), Pune* in 2018 noted that only 28 cloudbursts were reported between 1969 and 2015, but the number of mini-cloudbursts has steadily increased.
- These events are concentrated in Himalayan states such as Himachal Pradesh, Uttarakhand, and Jammu & Kashmir, as well as in urban coastal regions like Mumbai and Chennai.

Drivers of Rising Frequency

- Climate change has increased the atmosphere's moisture-holding capacity, making rainfall events more intense, as shown in the *Intergovernmental Panel on Climate Change, Sixth Assessment Report (IPCC AR6)*.
- The *IMD Monsoon Review Report 2024* highlighted that the interaction of *Western Disturbances (WDs)* with storms from the Bay of Bengal caused prolonged and intense rainfall in North India.
- Rapid urbanisation has led to the creation of urban heat islands, which amplify convection, as flagged in the *NITI Aayog Report on Urban Flooding (2021)*.
- Deforestation and land-use change in hilly terrain have reduced the natural absorptive capacity of soil, intensifying flash floods.

Challenges Posed

- Mini-cloudbursts often result in large-scale loss of human lives and livelihoods, as documented in NDMA's *Disaster Trends Report (2021)*.
- Infrastructure such as roads, bridges, hydropower projects, and urban drainage systems frequently collapse under sudden extreme rainfall.
- IMD has admitted that precise prediction of cloudbursts remains scientifically impossible despite advances in satellites and radars.
- The *Ministry of Earth Sciences (MoES) Annual Report 2021* highlights the lack of dense radar and monitoring stations in the Himalayan belt.
- Regional disparities have emerged, with Northwest India facing

rainfall surpluses and the Northeast experiencing deficits, complicating water security planning.

Government and Institutional Response

- The government has deployed Doppler Weather Radars, high-resolution satellites, and “Nowcasting” advisories to improve rainfall monitoring.
- The *National Monsoon Mission (2012–present)* has improved dynamical prediction models for extreme rainfall.
- NDMA has issued guidelines such as the *Urban Flooding Guidelines (2010)* and the *Landslide Hazard Mitigation Strategy (2019)*.
- The *MoES State of Climate Report (2023)* documents the use of mobile-based public alert systems such as *Mausam* and *Damini*.
- Policy frameworks such as the *NAPCC (2008)* and the *State Action Plans on Climate Change (SAPCCs)* provide a roadmap for adaptation.
- Disaster response institutions such as the *National Disaster Response Force (NDRF)* and the *State Disaster Response Forces (SDRFs)* carry out rescue and evacuation during such events.

Way Forward

- India needs to expand its network of rain gauges, Doppler radars, and monitoring stations in fragile ecosystems like the Himalayas.
- Urban planning must incorporate recommendations from the *NITI Aayog Urban Flood Mitigation Report (2021)*, including climate-sensitive drainage and zoning.
- Ecosystem-based solutions such as afforestation and slope stabilization, as recommended in the *NDMA Landslide Hazard Mitigation Strategy (2019)*, should be implemented.
- Capacity building of the NDRF and SDRFs through training and community-based disaster preparedness drills is necessary.
- Basin-level cooperation among Himalayan states is essential for river management, dam safety, and coordinated early warning.

Conclusion

The IMD’s observation regarding the rise in mini-cloudbursts highlights India’s growing vulnerability to extreme weather events in the era of climate change. While institutional responses are visible in the form of NDMA guidelines, MoES monitoring reports, and IMD forecasting improvements, the gap lies in implementation and local preparedness. Building climate-resilient infrastructure, strengthening early warning systems, and empowering communities are crucial for safeguarding lives and livelihoods in a monsoon-dependent country like India.

Defence

Q42. India has recently conducted the first successful rail-based launch of the Agni-P missile. Discuss the strategic significance of this capability for India's nuclear doctrine, second-strike survivability, and overall deterrence posture. (15 marks, 250 words)

Topic – India's Missile Technology

Source: The Indian Express

<https://indianexpress.com/article/explained/launched-from-train-why-agni-p-missile-test-is-significant-10271032/>

Introduction	India's defence preparedness reached a new milestone with the Defence Research and Development Organisation (DRDO) successfully test-firing the Agni-Prime (Agni-P) missile from a rail-based mobile launcher in September 2025. With this, India joins a select group of nations — Russia, the US, China, and possibly North Korea — possessing such capability. Beyond being a technological achievement, the development holds deep implications for India's nuclear doctrine, survivability of deterrence assets, and regional strategic balance.
Body	<ul style="list-style-type: none">• The Agni-P Missile: Technical Overview• Rail-Based Launch Platforms: Advantages• Strategic Significance for India's Nuclear Doctrine• Regional and Global Implications• Challenges and the Way Forward
Conclusion	The rail-based Agni-P launch represents a strategic leap in India's nuclear deterrence architecture. It strengthens the survivability of India's arsenal, reinforces its no-first-use doctrine, and ensures credible retaliation capability — the core of its nuclear posture. By integrating such technologies with careful governance, transparency, and diplomacy, India can enhance national security while maintaining its image as a responsible stakeholder in global nuclear stability.

UPSC Syllabus	India's Missile Technology
Why was this question asked?	Q. How is S-400 air defence system technically superior to any other system presently available in the world? (2021)
Introduction	India's defence preparedness reached a new milestone with the Defence Research and Development Organisation (DRDO) successfully test-

firing the Agni-Prime (Agni-P) missile from a rail-based mobile launcher in September 2025. With this, India joins a select group of nations — Russia, the US, China, and possibly North Korea — possessing such capability. Beyond being a technological achievement, the development holds deep implications for India’s nuclear doctrine, survivability of deterrence assets, and regional strategic balance.

Body

The Agni-P Missile: Technical Overview

- Agni-P is a two-stage, solid-fuel missile with an operational range of 1,000–2,000 km.
- It has a mass of 11,000 kg and can carry conventional and nuclear warheads including high explosive, thermobaric, and nuclear payloads.
- The platform draws on advanced propulsion and navigation technologies from Agni-IV and Agni-V, while replacing the ageing Agni-I missile.
- The system is canisterised, allowing quick launch readiness and enhanced mobility.

Rail-Based Launch Platforms: Advantages

- Nationwide reach: India’s 70,000 km railway network enables deployment across the country, unlike road-based systems limited by terrain and road quality.
- Concealment and survivability: Thousands of tunnels and bridges in the railway network allow launchers to hide from satellite surveillance, enhancing survivability against pre-emptive strikes.
- Cost-effectiveness: Rail platforms are cheaper to develop and maintain compared with ballistic missile submarines (SSBNs), allowing scalability at lower cost.
- Rapid mobility: Unlike silo-based systems that are fixed and vulnerable, rail launchers provide flexible and unpredictable movement patterns, complicating enemy targeting.

Strategic Significance for India’s Nuclear Doctrine

- India follows a “No First Use” (NFU) policy, relying heavily on the credibility of its second-strike capability.
- Stationary silos are increasingly vulnerable due to advancements in missile accuracy and satellite surveillance; mobile systems reduce this vulnerability.
- Rail-based Agni-P strengthens India’s nuclear triad by complementing land-based, sea-based, and air-based deterrent platforms.

- It enhances credible minimum deterrence, signalling to adversaries that India can retaliate even after absorbing a nuclear first strike.

4. Regional and Global Implications

- China and Pakistan context: The Agni-P's range (1,000–2,000 km) covers strategic assets in Pakistan and eastern China, reinforcing deterrence in South Asia.
- Strategic parity: By adopting survivable rail-based systems, India narrows the gap with nuclear peers like China, which has invested in road and rail-mobile systems.
- Arms race dimension: While strengthening deterrence, the move may spur neighbours to upgrade their own nuclear delivery systems, intensifying regional competition.

5. Challenges and the Way Forward

- Command and control: Dispersed mobile assets require robust C4ISR (Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance) networks to prevent miscommunication or unauthorized launches.
- Infrastructure integration: Coordinating missile systems with civilian railway operations demands safety, secrecy, and logistical planning.
- Diplomatic signalling: India must balance deterrence upgrades with its image as a responsible nuclear power committed to NFU and global non-proliferation norms.
- Next steps: Scaling up real-time tracking, investing in stealthier canisters, and parallel strengthening of SLBMs for the sea-leg of the triad.

Conclusion

The rail-based Agni-P launch represents a strategic leap in India's nuclear deterrence architecture. It strengthens the survivability of India's arsenal, reinforces its no-first-use doctrine, and ensures credible retaliation capability — the core of its nuclear posture. By integrating such technologies with careful governance, transparency, and diplomacy, India can enhance national security while maintaining its image as a responsible stakeholder in global nuclear stability.

