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QUESTION & ANSWERS

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Polity & Governance

Q1. Discuss the significance of the UGC (Promotion of Equity in Higher Education Institutions) Regulations, 2026 in addressing caste-based discrimination in India's higher education system.

(GS Paper II – Governance, Constitution, Polity, Social Justice - Government policies and interventions for social justice - Issues relating to education and vulnerable sections)

Introduction	Caste-based discrimination continues to undermine equality, dignity, and access in India's higher education institutions despite constitutional guarantees. The UGC (Promotion of Equity in Higher Education Institutions) Regulations, 2026 represent a decisive shift from advisory guidelines to an enforceable regulatory framework, aimed at institutionalising equity, inclusion, and accountability within universities and colleges.
Body	<p>1. Strengthening the Legal Framework for Social Justice</p> <ul style="list-style-type: none">• The 2026 Regulations explicitly include SCs, STs, and OBCs within the definition of caste-based discrimination, correcting a major omission in the draft rules. This aligns the regulatory framework with Articles 14, 15(4), 15(5), 21, and 46 of the Constitution, thereby giving statutory backing to the principle of substantive equality in education. <p>2. Institutionalising Equity Mechanisms</p> <ul style="list-style-type: none">• For the first time, all higher education institutions are mandated to establish Equal Opportunity Centres (EOCs) and Equity Committees with compulsory representation from marginalised groups, women, and persons with disabilities. This embeds equity within the governance architecture of institutions rather than treating it as an external obligation. <p>3. Ensuring Accountability and Enforcement</p> <ul style="list-style-type: none">• The regulations introduce a clear reporting and monitoring framework, including bi-annual and annual reports and oversight by a national-level monitoring committee. Importantly, penalties such as debarment from UGC schemes, prohibition of degree programmes, and even removal of recognition transform equity from a moral expectation into a regulatory duty. <p>4. Addressing Institutional Casteism</p> <ul style="list-style-type: none">• Studies such as the Thorat Committee (2007) and IIT Delhi

	<p>Study (2019) reveal systemic discrimination through segregation, bias, and exclusion. By making heads of institutions personally responsible for compliance, the regulations directly target institutional apathy and administrative inertia.</p> <p>5. Promoting Inclusive and Participatory Governance</p> <ul style="list-style-type: none"> • Mandatory representation of SCs, STs, OBCs, women, and persons with disabilities in Equity Committees democratises decision-making and reduces elite capture of academic administration, thus fostering trust among marginalised students. <p>6. Challenges and Implementation Gaps</p> <p>Despite their strength, the regulations face challenges such as:</p> <ul style="list-style-type: none"> • Absence of explicit safeguards against discrimination at the admission stage • Risk of EOCs becoming symbolic if not granted autonomy • Lack of independent appellate grievance mechanisms • Variation in institutional capacity and willingness to implement reforms
<p>Conclusion</p>	<p>The UGC Regulations, 2026 mark a critical evolution from symbolic inclusion to rights-based, enforceable equity governance in higher education. If backed by social audits, faculty sensitisation, independent grievance redressal, and political will, they can transform universities into truly inclusive spaces and fulfil the constitutional promise of equal education for all.</p>

Q2. “Delimitation after 2027 poses a fundamental tension between democratic equality and federal justice.” Discuss the challenges associated with this process and suggest a balanced way forward.

(GS Paper II - Federalism and Centre–State relations - Representation of the People Act and electoral reforms - Delimitation Commission)

<p>Introduction</p>	<p>Delimitation is constitutionally mandated to ensure equal representation based on population. However, the delimitation exercise due after Census 2027 will be the first inter-State redistribution since 1976 and is likely to reshape India’s political map. While it promotes democratic equality, it also threatens federal justice by altering the balance of power among States.</p>
<p>Body</p>	<p>Challenges Involved</p> <p>1. Democratic vs Federal Tension</p> <ul style="list-style-type: none"> • Population-based redistribution upholds <i>one person–one vote</i>, but penalises States that successfully controlled fertility.

	<ul style="list-style-type: none">• Southern and western States risk losing relative political influence despite better governance outcomes. <p>2. Concentration of Power</p> <ul style="list-style-type: none">• Projections show Uttar Pradesh and Bihar together could command over 25% of Lok Sabha seats.• This could distort coalition politics and weaken the bargaining power of smaller or better-performing States. <p>3. Regional Imbalance and Political Distrust</p> <ul style="list-style-type: none">• Fear of domination may deepen the North–South divide and weaken cooperative federalism.• Perceptions of unfairness can erode trust in national institutions. <p>4. Procedural and Timing Issues</p> <ul style="list-style-type: none">• Overlap with women’s reservation and SC/ST seat reallocation complicates sequencing.• Lack of transparency in the Delimitation Commission could raise legitimacy concerns. <p>Balanced Way Forward</p> <ul style="list-style-type: none">• Adopt a weighted formula combining population with development indicators such as literacy, health, and fertility control.• Expand the Lok Sabha to ensure no State loses seats while moderating disproportionality.• Strengthen the Rajya Sabha as a federal counterbalance by restoring domicile rules and equalising State representation.• Phase redistribution over two election cycles to reduce political shock.• Ensure transparent, consultative, and expert-led delimitation to maintain public trust.
<p>Conclusion</p>	<p>Delimitation must not become a zero-sum exercise. A constitutionally sensitive, ethically balanced, and federally respectful approach can ensure that democratic equality is achieved without undermining India’s federal compact.</p>

Q3. Each adjective associated with the term “Republic” in the Indian Constitution carries deep significance. Explain these adjectives and examine their relevance in contemporary India.

(GS Paper II – Indian Constitution & Polity)

<p>Introduction</p>	<p>The Preamble to the Constitution of India declares India as a “Sovereign Socialist Secular Democratic Republic.” While the term <i>Republic</i> signifies an elected Head of the State, the adjectives attached to it</p>
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	<p>express the core constitutional values that define the nature, objectives, and functioning of the Indian State. Together, they provide a normative framework guiding governance and public life in contemporary India.</p>
Body	<p>A Sovereign Republic implies that India possesses supreme authority over its internal and external affairs, free from foreign control and internal supremacy of any institution above the Constitution. In present times, sovereignty is reflected in strategic autonomy, independent foreign policy choices, and assertions of economic and digital self-reliance, subject to constitutional checks and balances.</p> <ul style="list-style-type: none">• A Socialist Republic, introduced through the 42nd Constitutional Amendment, reflects India's commitment to social and economic justice rather than rigid state socialism. It seeks to reduce inequalities and ensure equitable distribution of resources. Today, this is evident in welfare schemes, affirmative action, and redistributive policies, even as India pursues market-led growth.• A Secular Republic ensures equal respect for all religions and guarantees freedom of conscience. The Indian model of secularism emphasizes principled state neutrality while permitting reform. In a deeply plural society, secularism remains essential for maintaining social harmony amid rising identity-based politics.• A Democratic Republic vests sovereignty in the people through universal adult franchise, periodic elections, and accountable governance. High electoral participation and independent constitutional bodies highlight its relevance, though challenges of representation and transparency persist. <p>Finally, a Republic signifies rejection of hereditary rule, with the President elected indirectly, reinforcing equality and constitutional morality.</p>
Conclusion	<p>The adjectives attached to the Indian Republic are not mere descriptions but dynamic constitutional commitments. Despite contemporary challenges, they continue to guide India's democratic journey by balancing authority with accountability, growth with justice, and diversity with unity, making them the living pillars of the Indian Republic.</p>

Q4. “Recent controversies surrounding Governors’ addresses to State Legislatures have raised questions about the scope of gubernatorial discretion under Article 176.” Examine the constitutional position of the Governor in this context, with reference to constitutional provisions, conventions, judicial pronouncements, and their implications for federalism.

(GS Paper II (Polity & Governance))

Introduction	The Governor’s address to the State Legislature, mandated under Article 176 of the Constitution , is a key constitutional mechanism through which the elected State government communicates its policies and priorities. Recent incidents in Opposition-ruled States, where Governors have omitted portions of or declined to deliver the cabinet-approved address, have renewed debates on the scope of gubernatorial discretion and its impact on India’s federal and parliamentary framework.
Body	<p>Constitutional Position of the Governor</p> <ul style="list-style-type: none">• The Constitution envisages the Governor as a constitutional head, not an independent authority. Under Article 163, the Governor is required to act on the aid and advice of the Council of Ministers except in matters where the Constitution explicitly grants discretion. Article 176 makes the address to the Legislature mandatory and treats it as a statement of the elected government’s policies, while Article 175 allows addresses or messages as part of executive functioning, again subject to ministerial advice. <p>Constituent Assembly and Judicial Interpretation</p> <ul style="list-style-type: none">• The Constituent Assembly clearly intended that the Governor’s address should reflect the will of the elected executive rather than personal views. This understanding has been consistently upheld by the Supreme Court. In Shamsher Singh v. State of Punjab (1974) and Nabam Rebia v. Deputy Speaker (2016), the Court affirmed that the Governor has no personal discretion in routine executive matters. More recently, State of Tamil Nadu v. Governor of Tamil Nadu (2024) reiterated that discretionary powers cannot be used to obstruct elected governments. <p>Debate on Discretion</p> <ul style="list-style-type: none">• Proponents of limited discretion argue that the Governor’s oath under Article 159 obliges protection of constitutional values. However, critics highlight that altering or refusing the address undermines federalism, dilutes legislative accountability, and risks creating a parallel authority in a parliamentary system.

	Judicial review, rather than unilateral gubernatorial action, is the constitutionally preferred remedy for addressing unconstitutional content.
Conclusion	The Governor's address under Article 176 is a ceremonial yet constitutionally significant function , firmly anchored in the aid and advice of the elected Council of Ministers. Expanding gubernatorial discretion in this domain threatens parliamentary democracy and the federal balance. Adherence to constitutional conventions, judicial guidance, and cooperative dialogue between Governors and State governments is essential to preserve democratic accountability and the spirit of cooperative federalism.

International Relations

Q5. "Critically examine the implications of the recent US military intervention in Venezuela for international law, regional stability, and India's foreign policy."

(GS Paper II: International Relations, Bilateral, regional and global groupings)

Introduction	The recent US military action in Venezuela and the capture of President Nicolás Maduro marks one of the most direct interventions by a major power in Latin America in decades. The episode raises serious concerns regarding international law, sovereignty, and the evolving global order.
Body	<p>Implications for International Law</p> <ul style="list-style-type: none">The operation was conducted without a UN Security Council mandate or a declared war, raising questions about violations of the UN Charter and the principle of state sovereignty. The seizure of a sitting head of state sets a dangerous precedent and weakens norms that govern interstate conduct. <p>Regional and Global Stability</p> <ul style="list-style-type: none">The intervention revives the Monroe Doctrine, reinforcing US dominance in the Western Hemisphere. It risks destabilising Latin America, provoking counter-reactions from powers such as Russia and China, and normalising regime-change strategies justified through security narratives. <p>Energy and Strategic Interests</p> <ul style="list-style-type: none">Venezuela's vast oil reserves underline the resource dimension of the intervention. Control over energy assets and revival of oil production through US companies point to economic

	<p>motivations alongside security claims.</p> <p>India's Foreign Policy Dilemma</p> <ul style="list-style-type: none"> India, a proponent of strategic autonomy and a rules-based international order, faces a delicate balancing act. While political stakes are limited, India must uphold principles of sovereignty and non-intervention, especially as a voice of the Global South.
Conclusion	<p>The Venezuela episode highlights the tension between power politics and international norms. For India and the global community, reinforcing multilateralism and legal frameworks remains essential to prevent a slide towards unilateral interventionism.</p>

Q6. “The India–EU Free Trade Agreement is more than a trade pact; it is a strategic partnership in a fragmented global order.” Discuss the opportunities and challenges associated with the agreement.

(GS Paper II: International Relations, International Institutions, Government Policies & Interventions, International Treaties & Agreements, Effect of Foreign Policies on India's Interests)

Introduction	<p>The conclusion of the India–European Union Free Trade Agreement (FTA) marks a decisive shift from a narrow commercial arrangement to a broader strategic partnership between two major democratic blocs. In an era marked by geopolitical fragmentation, supply-chain disruptions, and weaponisation of trade, the agreement reflects a shared intent to build resilient, rules-based economic cooperation.</p>
Body	<p>Opportunities Associated with the India–EU FTA</p> <ul style="list-style-type: none"> First, the FTA offers unprecedented market access for Indian exports, with the EU opening 97% of its tariff lines, significantly benefiting labour-intensive sectors such as textiles, leather, gems and jewellery, footwear, and marine products. This can generate large-scale employment and boost MSMEs. Second, the agreement strengthens services trade and professional mobility, as the EU has committed to liberalisation in 144 services subsectors, including IT, digital, education, and professional services. This supports India's comparative advantage in human capital and services-led growth. Third, strategically, the FTA advances the China-plus-one diversification strategy, positioning India as a trusted manufacturing and services alternative for the EU. It also deepens cooperation in critical areas such as clean energy, semiconductors, digital trade, and defence manufacturing. Fourth, compliance with EU standards can trigger a quality

	<p>upgradation (Brussels Effect), making Indian goods globally competitive beyond the EU market.</p> <p>Challenges Associated with the Agreement</p> <ul style="list-style-type: none"> • However, the FTA faces serious challenges. The EU’s regulatory regimes such as CBAM, EUDR and CSDDD function as non-tariff barriers, imposing high compliance costs on Indian exporters, especially MSMEs and small farmers. • Further, there is asymmetry in tariff gains, as most Indian exports already face low EU tariffs, while India must undertake deeper tariff cuts. Concerns also exist regarding data governance, digital sovereignty, and pressure against India’s Quality Control Orders.
<p>Conclusion</p>	<p>The India–EU FTA is a strategic instrument to shape a stable economic order amid global uncertainty. Its success, however, depends on securing equitable carve-outs, managing regulatory asymmetries, and leveraging services and technology cooperation, ensuring that strategic convergence translates into inclusive economic gains.</p>

Economy

Q7. How did the initiatives of the Ministry of Petroleum & Natural Gas in 2025 strengthen India’s energy access, sustainability, and long-term energy security?

(GS Paper III: Energy security, clean energy transition)

<p>Introduction</p>	<p>In 2025, the Ministry of Petroleum & Natural Gas (MoPNG) pursued a multi-pronged energy strategy aligned with the objectives of energy access, sustainability, affordability, and security. Through welfare-oriented schemes, infrastructure expansion, clean fuel transition, and upstream reforms, India strengthened its resilience against supply disruptions while advancing an inclusive energy transition.</p>
<p>Body</p>	<p>Strengthening Energy Access</p> <ul style="list-style-type: none"> • Universal access to clean cooking energy remained a core priority. Under the Pradhan Mantri Ujjwala Yojana, beneficiary coverage expanded to over 10.35 crore households, supported by simplified eligibility norms and additional LPG connections. Targeted LPG subsidies improved affordability, leading to higher refill rates and sustained behavioural shift away from biomass fuels.

- Expansion of **City Gas Distribution** networks, with rising PNG connections and CNG stations, improved access to cleaner fuels in urban and peri-urban areas. Door-to-door fuel delivery and improved retail outlet amenities further enhanced last-mile energy access.

Advancing Energy Sustainability

- India accelerated its transition to cleaner fuels in 2025. **Ethanol blending** crossed 19%, reducing emissions and import dependence. The rollout of **Compressed Bio-Gas (CBG)** blending obligations and operationalisation of second-generation ethanol plants strengthened circular economy linkages.
- Electric mobility was promoted through large-scale deployment of **EV charging infrastructure** and development of **multi-fuel Energy Stations**. Introduction of **Sustainable Aviation Fuel (SAF)** blending targets marked a strategic step toward decarbonising hard-to-abate sectors like aviation.

Enhancing Long-Term Energy Security

- Expansion of the national gas pipeline network and implementation of the **Unified Pipeline Tariff (One Nation–One Grid–One Tariff)** improved regional equity and market integration, reducing logistics costs and price volatility.
- Upstream sector reforms through the **Oilfields (Regulation and Development) Amendment Act, 2025** and expanded hydrocarbon exploration under HELP strengthened domestic production prospects. Simultaneously, progress in **Strategic Petroleum Reserves** and overseas energy investments enhanced India's preparedness against global supply shocks.

Conclusion

The initiatives of 2025 reflect a calibrated shift from energy availability to **energy resilience**. By combining welfare delivery, cleaner fuels, infrastructure integration, and upstream reforms, India strengthened energy access, advanced sustainability, and laid the foundation for long-term energy security in an increasingly uncertain global energy landscape.

Q8. Examine the major achievements of the Ministry of Micro, Small and Medium Enterprises (MSME) in 2025. How do these achievements strengthen the role of MSMEs in India's economic growth, and what challenges must be addressed to enhance their long-term competitiveness?

(GS Paper III (Indian Economy))

Introduction	Micro, Small and Medium Enterprises (MSMEs) are the backbone of the Indian economy, contributing about 30% to GDP , 36% to manufacturing output , and employing over 12 crore people . In 2025, the Ministry of MSME focused on formalisation, credit expansion, infrastructure creation, technology upgradation, and market access to strengthen inclusive and sustainable growth.
Body	<p>Major Achievements of the Ministry of MSME in 2025</p> <ol style="list-style-type: none">1. Formalisation<ul style="list-style-type: none">Over 7.3 crore enterprises were registered on the Udyam platforms, enabling access to credit, subsidies, and public procurement.2. Credit & Financial Support<ul style="list-style-type: none">PMEGP generated large-scale employment, CGTMSE provided collateral-free guarantees worth ₹3.77 lakh crore, and the SRI Fund addressed the “missing middle” through equity support.3. Infrastructure & Artisan Support<ul style="list-style-type: none">The PM Vishwakarma Scheme achieved 30 lakh registrations, while RAMP and cluster development schemes improved industrial infrastructure and regional balance.4. Market Access & Inclusion<ul style="list-style-type: none">Public procurement from MSMEs exceeded the mandated 25%, and the National SC/ST Hub expanded opportunities for disadvantaged entrepreneurs.5. Technology & Skills<ul style="list-style-type: none">The MSME Champion Scheme, ZED certification, and new Technology Centres enhanced productivity, quality, and innovation.6. Governance & Global Outreach<ul style="list-style-type: none">ODR and CHAMPIONS portals improved dispute resolution, while rising Khadi sales and international MoUs strengthened global integration. <p>Significance for Economic Growth</p> <ul style="list-style-type: none">MSMEs drive employment, exports (≈45%), regional development, and innovation, reinforcing India's digital and entrepreneurial ecosystem.

	<p>Persisting Challenges</p> <ul style="list-style-type: none"> Despite progress, MSMEs face credit gaps, delayed payments, regulatory burden, infrastructure bottlenecks, skill mismatches, limited technology adoption, and ESG compliance pressures, which constrain scale, productivity, and global competitiveness. <p>Way Forward</p> <ul style="list-style-type: none"> Strengthen formal credit delivery through fintech, TReDS, and strict enforcement of payment timelines. Accelerate digital and technological adoption via MSME tech hubs and innovation clinics. Promote export consortia, FTA utilisation, and e-commerce integration. Encourage sustainable and inclusive entrepreneurship through green finance, ESG-linked credit, and women-focused support.
<p>Conclusion</p>	<p>The year 2025 consolidated MSMEs as a resilient growth engine. Addressing structural constraints is essential to transform the sector into a globally competitive and sustainable pillar of India’s long-term economic development.</p>

Q9. “Airport privatisation in India has evolved as a key instrument for infrastructure modernisation and asset monetisation under the National Monetisation Pipeline. Discuss the rationale and process of airport privatisation in India, and critically examine the emerging concerns related to revenue models, market concentration, and passenger affordability.”

<p>Introduction</p>	<p>Airport privatisation in India forms a crucial part of the government’s infrastructure reform agenda under the National Monetisation Pipeline (NMP). It aims to modernise aviation infrastructure, mobilise private capital, and enhance service efficiency amid rapidly rising air traffic demand.</p>
<p>Body</p>	<p>Rationale for Airport Privatisation</p> <ul style="list-style-type: none"> The primary objectives of airport privatisation include improving service quality, expanding airport capacity, and reducing the financial burden on the public exchequer. With Airports Authority of India (AAI) managing both aeronautical and non-aeronautical assets, private participation is expected to introduce global best practices, attract investment, and strengthen non-aeronautical revenue streams to cross-subsidise passenger costs. Given that only about 6% of Indians currently

	<p>use air travel, privatisation is seen as essential for supporting long-term aviation growth, regional connectivity, and tourism.</p> <p>Process and Evolution</p> <ul style="list-style-type: none"> • Airport privatisation began in the early 2000s with Delhi and Mumbai airports, followed by greenfield PPP airports such as Hyderabad and Bengaluru. In 2019, six additional airports were privatised, marking a shift from a revenue-sharing model to a per-passenger fee model. The ongoing third round proposes leasing 11 AAI airports under PPP, introducing bundling of metro and non-metro airports for the first time. This phase aligns with the NMP’s goal of monetising brownfield assets to finance new infrastructure. <p>Concerns and Criticisms</p> <ul style="list-style-type: none"> • A major concern is market concentration, with control of multiple major airports by a single corporate group, raising fears of monopoly and reduced competition. Rising passenger costs, including higher User Development Fees and ancillary charges, have also emerged as key issues. Additionally, disputes over under-reporting of non-aeronautical revenues and service quality concerns persist despite tariff regulation by the Airport Economic Regulatory Authority (AERA).
<p>Conclusion</p>	<p>While airport privatisation has contributed to infrastructure modernisation and investment mobilisation, its success depends on robust regulatory oversight, competition safeguards, transparent bidding, and a balanced approach that protects passenger affordability while ensuring operational efficiency.</p>

Q10. Despite its economic significance, India’s marine fisheries sector continues to face stagnation and inequality. Analyse the key challenges and suggest measures for achieving sustainable and inclusive growth.

(GS Paper III – Agriculture, Fisheries, External Trade, Food Processing, Export Competitiveness)

<p>Introduction</p>	<p>India’s marine fisheries sector is a critical pillar of the rural and coastal economy, contributing 1.24% to agricultural GVA, providing livelihoods to over 16 million people. However, despite its importance, the sector remains marked by ecological degradation, economic inequality, and governance gaps.</p>
<p>Body</p>	<p>Structural Challenges in Marine Fisheries</p> <ol style="list-style-type: none"> 1. Overfishing and Resource Depletion : Nearly 30% of marine fish stocks are overexploited, leading to declining catches and

threatening long-term sustainability, as highlighted by CMFRI.

2. **Economic Inequality and Access Asymmetry:** While **small-scale fishers constitute around 80–90% of the workforce**, mechanised fleets capture **nearly 70% of the total catch**, marginalising artisanal communities.
3. **Ecological Stress and Bycatch:** Over **50% of trawl hauls consist of juvenile and low-value bycatch**, much of which is diverted to the fishmeal and fish oil industry, undermining future stock regeneration.
4. **Post-Harvest Losses and Market Failures:** Inadequate cold chains and processing infrastructure result in **around 20% post-harvest losses**, disproportionately affecting small fishers reliant on middlemen and informal credit.
5. **Fragmented Governance and Weak Enforcement:** Disparate Marine Fisheries Regulation Acts (MFRAs) across **13 coastal states** allow regulatory arbitrage, weak monitoring, and laundering of illegal catch.

Government Initiatives and Their Impact

- **Pradhan Mantri Matsya Sampada Yojana (PMMSY)** aims to create **5.5 million jobs**, double exports, and promote sustainable fisheries through infrastructure and value-chain investments.
- **Uniform 61-day monsoon fishing ban** supports stock regeneration.
- **Satellite-based PFZ advisories and GIS mapping** improve productivity and planning.
- **FIDF (₹7,522 crore)** addresses harbour, cold-chain, and hatchery gaps.
- **NFDB and Matsya Setu App** promote scientific practices and capacity building.

While these measures have improved productivity and exports, their **benefits remain uneven**, with sustainability and equity outcomes still limited.

Way Forward

- Enact a **Unified National Fisheries Code** with standardised mesh sizes, MLS norms, and scientific catch limits.
- **Empower coastal communities** through rights-based governance and community-managed marine protected areas.
- **Regulate the fishmeal industry** and incentivise alternative uses of juvenile catch.
- Strengthen **institutional credit, skills training, and value addition**.

	<ul style="list-style-type: none"> • Deepen global cooperation through FAO and IORA to combat IUU fishing.
Conclusion	India's marine fisheries sector stands at a crossroads. Aligning growth with ecological sustainability and social justice—within the broader Blue Economy framework —is essential to transform fisheries into a resilient, inclusive, and future-ready sector.

Q11. “India’s emergence as the world’s largest rice producer has intensified concerns over water security, climate change, and ecological sustainability.” Critically examine the challenges associated with rice cultivation in India and suggest measures for achieving sustainable rice production.

Introduction	In 2025, India emerged as the world’s largest rice producer and exporter, supplying nearly 40% of global rice exports. While this strengthens global food security, it has also exposed serious sustainability challenges, especially in water-stressed regions.
Body	<p>Challenges Associated with Rice Cultivation</p> <ol style="list-style-type: none"> 1. Groundwater Depletion: Rice is highly water-intensive, consuming 3,000–4,000 litres per kg. In Punjab and Haryana, groundwater extraction exceeds recharge by up to 57%, leading to inter-generational ecological injustice. 2. Environmental Degradation: Flooded paddy fields emit methane, contributing 10–20% of agricultural GHG emissions. Stubble burning further aggravates PM2.5 pollution and winter smog. 3. Health Risks: Use of arsenic-contaminated groundwater leads to arsenic accumulation in rice, increasing risks of cancer and neurological disorders. 4. Economic Stress on Farmers: Rising costs of deep borewells and energy-intensive pumps trap small farmers in debt, while subsidies disproportionately benefit large farmers. 5. Climate Vulnerability: Climate change may reduce rice yields by 6–10%, with erratic monsoons threatening rainfed eastern India. <p>Measures for Sustainable Rice Production</p> <ul style="list-style-type: none"> • Shift from input subsidies to direct income support and payments for ecosystem services. • Promote water-efficient technologies like DSR, AWD, SRI, and micro-irrigation under Pradhan Mantri Krishi Sinchai Yojana. • Develop climate-resilient rice varieties under National

	<p>Innovations in Climate Resilient Agriculture.</p> <ul style="list-style-type: none"> • Break rice–wheat monoculture through diversification into millets, pulses, and agroforestry. • Strengthen community-led groundwater governance and Farmer Producer Organisations (FPOs).
Conclusion	Rice remains indispensable for food security, but its unchecked expansion threatens India’s water–energy–climate nexus. Sustainable rice production requires policy reform, technological innovation, and diversification to balance food security with ecological resilience.

Q12. “Micro, Small and Medium Enterprises (MSMEs) form the backbone of India’s economy.” In this context, examine the role of MSMEs in India’s journey towards Viksit Bharat. Discuss the key challenges faced by the MSME sector and suggest measures to strengthen it in a sustainable and inclusive manner.

(GS Paper III – Inclusive Growth, Industry, Employment)

Introduction	Micro, Small and Medium Enterprises (MSMEs) form the backbone of India’s economy, contributing nearly 30% of GDP , 45% of manufacturing output , and a significant share of exports. They are central to employment generation, innovation, and inclusive growth in India’s journey towards <i>Viksit Bharat@2047</i> .
Body	<p>Role of MSMEs in Viksit Bharat</p> <ul style="list-style-type: none"> • Growth & Industrial Base: Key contributors to GDP and manufacturing; strengthen industrial clusters in textiles, auto, pharma, and electronics. • Employment & Inclusion: Account for about 62% of employment, especially for women, youth, and informal workers. • Digitalisation & Innovation: Platforms like Udyam Portal, ONDC, and fintech credit systems are improving market and credit access. • Export Competitiveness: Contribute nearly 46% of India’s exports, enhancing resilience in global trade. • Rural Development: Agri-based MSMEs promote non-farm employment and reduce distress migration. <p>Key Challenges</p> <ul style="list-style-type: none"> • High informality and incomplete formalisation. • Credit gap and delayed payments causing working capital stress. • Low technology adoption and productivity.

	<ul style="list-style-type: none"> • Skill shortages and weak human capital. • Heavy regulatory compliance burden. • Limited market access and difficulty meeting global ESG norms. <p>Measures to Strengthen MSMEs</p> <ul style="list-style-type: none"> • Expand data-driven, collateral-free credit and CGTMSE coverage. • Enforce time-bound payments through MSME Samadhaan. • Simplify regulations via single-window, risk-based compliance. • Promote technology upgradation through clusters and common facilities. • Strengthen skilling and apprenticeships. • Support exports, digital market access, and green transition.
<p>Conclusion</p>	<p>A strong MSME sector is indispensable for <i>Viksit Bharat@2047</i>. Addressing credit, technology, compliance, and skill constraints while enabling scale and sustainability will transform MSMEs into engines of inclusive, resilient, and globally competitive growth.</p>

Q13. A decade after the launch of the Startup India Initiative, India has emerged as one of the world's largest startup ecosystems. However, structural constraints continue to limit its transition towards innovation-driven and sustainable growth. Discuss the achievements of the Startup India Initiative, examine the major challenges faced by India's startup ecosystem, and suggest measures to strengthen it in alignment with the vision of Viksit Bharat 2047.

(GS Paper III – Economic Development, Innovation, Entrepreneurship, Employment Generation, MSMEs)

<p>Introduction</p>	<p>The Startup India Initiative, launched in 2016, marked a strategic shift in India's development model from a job-seeking to a job-creating economy. Over the past decade, it has played a pivotal role in expanding entrepreneurship, innovation, and employment generation across the country.</p>
<p>Body</p>	<p>Achievements of the Startup India Initiative</p> <ul style="list-style-type: none"> • India today hosts over 2 lakh DPIIT-recognised startups, making it one of the largest startup ecosystems globally. The rise of over 120 unicorns, with a combined valuation exceeding USD 350 billion, reflects improved access to capital and market depth. Importantly, nearly 50% of startups now originate from Tier II and Tier III cities, indicating decentralisation of entrepreneurship beyond metropolitan hubs. Flagship schemes

such as the **Fund of Funds for Startups**, **Startup India Seed Fund Scheme**, and digital platforms like **Startup India Hub and MAARG Portal** have strengthened domestic risk capital, early-stage support, and mentorship. Collectively, startups have emerged as engines of employment, innovation, and digital transformation, aligned with *Viksit Bharat 2047*.

Key Challenges Facing the Startup Ecosystem

- Despite progress, structural bottlenecks persist. India's **low R&D intensity (0.64% of GDP)** constrains deep-tech innovation, while venture capital remains biased towards consumer-centric sectors such as fintech and e-commerce. Limited domestic risk capital increases dependence on foreign funding, exposing startups to global financial volatility. Infrastructure gaps in Tier II, Tier III, and rural areas raise operational costs. The recent **funding slowdown, startup closures, and weak IPO exits** further highlight concerns regarding sustainability and long-term scale-up.

Way Forward

- India must deepen **domestic patient capital** by enabling pension and insurance funds to invest in startups. Stronger **industry-academia linkages** and mission-mode funding under initiatives like IndiaAI and Semiconductor Mission can boost applied R&D. Improving infrastructure beyond metros, simplifying regulations, strengthening exit mechanisms, and promoting **green and deep-tech innovation** are critical to ensure sustainable growth.

Conclusion

As Startup India enters its second decade, the focus must shift from rapid expansion to innovation-led and resilient scaling. With sustained reforms and strategic support, startups can remain central to India's journey towards a USD 7.3 trillion economy and *Viksit Bharat 2047*.

Q14. "The effectiveness of the Union Budget depends as much on macroeconomic conditions as on policy intent." Discuss this statement in the context of the macroeconomic challenges facing India ahead of Budget 2026.

(GS Paper III - Indian Economy and issues relating to growth, development and employment)

Introduction

The Union Budget is not merely a policy document but a reflection of the prevailing macroeconomic reality. Ahead of Budget 2026, India faces slowing nominal GDP growth, weak tax buoyancy, and subdued private investment, which significantly constrain the Finance Minister's ability to use the Budget as an instrument of economic transformation.

	This underlines that policy intent alone cannot deliver results without supportive macroeconomic conditions.
Body	<p>1. Weak Nominal GDP Growth: Constraining Fiscal Space</p> <ul style="list-style-type: none"> • Budgetary calculations are based on nominal GDP, not real GDP. • Slower nominal growth directly reduces expected tax revenues. • This forces the government to either borrow more (raising interest rates and crowding out private credit) or cut expenditure, affecting welfare and capital spending. • Thus, even well-designed policies lose effectiveness when fiscal space shrinks. <p>2. Collapse of Tax Buoyancy: Revenue Stress</p> <ul style="list-style-type: none"> • Tax buoyancy has fallen below 1, meaning revenues are not rising in proportion to economic growth. • Underperformance of GST, income tax, and corporate tax limits the government’s ability to finance new schemes. • This weakens counter-cyclical fiscal policy at a time when growth support is needed most. <p>3. Weak Private Investment: Limits Growth Transmission</p> <ul style="list-style-type: none"> • Despite corporate tax cuts, PLI schemes, and high public capex, private corporate investment remains muted. • Demand deficiency, global uncertainty, and low capacity utilisation discourage firms from investing. • Without private sector participation, public spending cannot generate sustainable, job-rich growth.
Conclusion	For Budget 2026 to be effective, India must focus on reviving nominal growth, improving tax buoyancy, and restoring investor confidence . Structural reforms in taxation, demand stimulation, and credit flow are essential to complement fiscal policy. Ultimately, the Budget’s success lies not only in policy announcements but in aligning them with macroeconomic realities to ensure durable economic recovery.

Q15. “Data privacy is no longer a technical concern but a democratic imperative in India’s digital governance.” In the context of International Data Privacy Day, examine India’s legal, institutional, and technological measures to ensure a secure and citizen-centric digital ecosystem.

(GS Paper III (Cybersecurity, Digital Economy))

Introduction	India’s rapid digitalisation has transformed governance and service delivery at population scale, making data privacy central to trust, inclusion, and democratic accountability. International Data Privacy
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	Day highlights India's commitment to responsible and citizen-centric digital governance.
Body	<p>1. Legal Framework for Data Protection</p> <ul style="list-style-type: none">• IT Act, 2000 provides the foundation for e-governance, cybersecurity, and digital transactions.• IT Intermediary Rules, 2021 mandate due diligence and grievance redressal by platforms.• DPDP Act, 2023 and DPDP Rules, 2025 create a SARAL, citizen-centric regime balancing privacy and innovation.• Establishment of Data Protection Board of India ensures enforcement and accountability. <p>2. Institutional & Cybersecurity Mechanisms</p> <ul style="list-style-type: none">• CERT-In as the national incident response agency.• I4C (2018) coordinates cybercrime prevention.• CFMC (2024) enables real-time fraud mitigation.• National Cyber Forensic Laboratories strengthen investigation and prosecution.• ₹782 crore (2025–26) allocated for cybersecurity. <p>3. Technological & Citizen-Centric Measures</p> <ul style="list-style-type: none">• NCRP, CFCFRMS, and 1930 helpline for easy reporting of cyber frauds.• Samanvaya platform for analytics and inter-state coordination.• Sahyog platform for takedown of unlawful content.• Cyber Swachhta Kendra for malware removal and awareness.• Capacity building through CyTrain, Cyber Commando Programme, CSPAI (AI security).
Conclusion	By combining robust laws, strong institutions, advanced technology, and citizen empowerment, India is building a resilient digital ecosystem where innovation is anchored in trust, security, and accountability, ensuring its digital future remains inclusive and democratic.

Environment & Ecology

Q16. What is a bomb cyclone? Explain its formation and why it causes severe weather conditions.

(GS Paper I: Physical Geography – Climatology)

Introduction

A bomb cyclone is an extremely intense **mid-latitude storm system**

	that undergoes explosive intensification . Recently, such a storm affected the northern United States, causing widespread power outages, flight disruptions, and blizzard conditions, highlighting its destructive potential.
Body	<p>Formation of a Bomb Cyclone</p> <ul style="list-style-type: none"> • Bomb cyclones form when cold polar air collides with warm, moist air. • The warm air rises rapidly, deepening the low-pressure system. • When the central pressure falls by at least 24 millibars within 24 hours, the process is termed bombogenesis. • The steep pressure gradient created results in very strong surface winds. <p>Why Bomb Cyclones Are Highly Dangerous</p> <ul style="list-style-type: none"> • Strong Winds: Wind speeds can reach 80 kmph or more, uprooting trees and damaging infrastructure. • Blizzard Conditions: Heavy snowfall combined with strong winds leads to whiteout conditions. • Power and Transport Disruption: Power lines collapse and aviation, road, and rail networks are severely affected. • Secondary Impacts: Coastal or lakeshore flooding and extremely low wind-chill temperatures.
Conclusion	Bomb cyclones are among the most violent non-tropical storms due to their rapid intensification and large spatial impact. With increasing climate variability, such extreme weather events underline the need for advanced forecasting systems and resilient infrastructure to minimise human and economic losses.

Q17. Critically examine the achievements and limitations of the Paris Agreement after a decade of its implementation. How should India navigate global climate commitments while pursuing development?

(GS Paper III: Climate change, Sustainable development, Energy transition)

Introduction	The Paris Agreement, adopted in 2015, marked a paradigm shift in global climate governance by ensuring universal participation through nationally determined contributions. As it completes ten years, its outcomes demand critical evaluation.
Body	<p>Achievements</p> <ul style="list-style-type: none"> • The Agreement succeeded in mainstreaming climate action globally. Nearly all nations committed to mitigation and adaptation under a common framework. It institutionalised

	<p>mechanisms such as NDCs, global stocktakes, and transparency frameworks. Climate action became embedded in national development strategies, while renewable energy and climate finance markets expanded significantly.</p> <p>Limitations</p> <ul style="list-style-type: none"> • However, the Agreement’s reliance on voluntary commitments weakened accountability. Current NDCs place the world on a 2.5–2.9°C warming path, far from agreed targets. Persistent climate finance gaps, dilution of CBDR principles, and mitigation-centric bias marginalised adaptation needs of vulnerable countries. Trade measures like CBAM further constrain developing economies. <p>India’s Approach</p> <ul style="list-style-type: none"> • India has demonstrated climate leadership by achieving 50% non-fossil electricity capacity ahead of schedule and committing to net zero by 2070. Yet, with low per capita emissions and development imperatives, India rightly emphasises equity, adaptation, and climate finance. <p>Way Forward</p> <ul style="list-style-type: none"> • Climate governance must move towards enforceable commitments, assured finance, and equal emphasis on adaptation. India should continue advocating development-aligned climate pathways while strengthening domestic resilience.
Conclusion	The Paris Agreement remains indispensable but incomplete. Its success depends on reconciling climate ambition with development justice—an approach India is uniquely positioned to champion.

Q18. Urban Heat Islands (UHIs) have emerged as a major challenge in rapidly urbanising Indian cities. Explain the causes and impacts of the UHI phenomenon and discuss how it affects urban biodiversity, particularly birds, suggesting suitable climate-resilient and ecologically sensitive mitigation measures.

Introduction	Rapid urbanisation in India has significantly altered local microclimates, leading to the Urban Heat Island (UHI) phenomenon, wherein urban areas record higher temperatures than their rural surroundings. Growing concretisation, shrinking green spaces and rising anthropogenic heat emissions have transformed cities into heat-retaining environments, intensifying climate risks for both humans and urban ecosystems.
Body	Causes of Urban Heat Island Effect

- **Excessive concretisation (urban deserts):** Asphalt and concrete absorb and store heat, while reduced vegetation lowers evapotranspiration.
- **Urban canyon effect:** High-rise buildings trap radiant energy, restrict wind flow and inhibit night-time heat release.
- **Anthropogenic heat emissions:** Heat from vehicles, industries, air conditioners and fossil fuel use raises ambient temperatures.
- **Urban haze and pollution:** Air pollutants act as a greenhouse layer, trapping outgoing long-wave radiation.
- **Altered humidity dynamics:** Higher temperatures reduce relative humidity, increasing thermal discomfort.

Impacts of Urban Heat Islands

- **Human and economic impacts:** UHIs increase heat-related illnesses, raise electricity demand for cooling (by up to 20%), reduce labour productivity and increase healthcare costs, while also affecting tourism and food price stability.
- **Environmental impacts:** They alter urban microclimates, disturb rainfall patterns, increase stormwater runoff, reduce groundwater recharge and worsen air quality through thermal inversion and ground-level ozone formation.
- **Impact on Urban Biodiversity, Especially Birds:** Birds serve as early indicators of urban ecological stress. Elevated temperatures cause dehydration, hyperthermia and oxidative stress. Behavioural responses include reduced daytime activity, nest abandonment and shortened breeding seasons. Empirical studies from Indian cities reveal declining bird abundance and species richness in hotter urban zones, leading to **biotic homogenisation**, where only heat-tolerant species dominate.

Way Forward

- Promote **urban greening** through native trees, green roofs and parks.
- Restore **urban ponds and wetlands** as natural heat sinks and wildlife habitats.
- Adopt **climate-sensitive urban design** using cool roofs, reflective and permeable surfaces.
- Develop **biodiversity corridors** linking green and blue spaces.
- Strengthen **building codes** and encourage citizen participation.
- These measures align with the **National Mission on Sustainable Habitat, SDG-11 (Sustainable Cities)** and **SDG-15 (Life on Land)**.

Conclusion

Urban Heat Islands are not merely thermal anomalies but ecological warnings. Integrating nature-based solutions into urban planning can simultaneously cool cities and conserve biodiversity, ensuring resilient and livable urban futures.

Q19. Critically examine the role of the International Solar Alliance (ISA) in promoting South–South cooperation in solar energy deployment. Discuss the major challenges that limit its effectiveness as a South-led global energy institution.

(GS Paper III (Environment & Economy))

Introduction

The **International Solar Alliance (ISA)**, launched in 2015 and headquartered in Gurugram, is a treaty-based intergovernmental organisation led by India and France. It aims to mobilise collective action among solar-rich developing countries to accelerate solar energy deployment and support a just and inclusive energy transition.

Body

Role of ISA in Promoting South–South Cooperation

1. Platform for Collective Action of the Global South

- ISA provides a dedicated multilateral forum for developing countries to share experiences, pool demand, and articulate common priorities in solar energy. This collective voice reduces dependence on North-centric climate finance and technology pathways, strengthening South–South cooperation.

2. Facilitating Access to Affordable Finance

- A major contribution of ISA lies in addressing the high “cost of capital” faced by developing countries. Through blended finance models, risk-mitigation instruments, and collaboration with multilateral development banks, ISA helps improve access to affordable solar finance by leveraging collective credibility.

3. Technology Transfer and Capacity Building

- ISA promotes horizontal knowledge sharing through training programmes, technical assistance, and policy advisory support. Initiatives such as solar training institutes enable member countries to adapt solar technologies to local conditions, reinforcing South–South learning rather than vertical dependence on developed countries.

4. Aggregation of Demand and Standardisation

- By aggregating demand for solar products such as solar pumps and rooftop systems, ISA enables economies of scale, reduces procurement costs, and strengthens intra-South trade and manufacturing linkages. This supports the development of domestic solar ecosystems in member countries.

6. Supporting Nationally Determined Contributions (NDCs)

- ISA aligns its programmes with the climate goals of member states, assisting them in meeting their NDC targets under the Paris Agreement while respecting developmental priorities. This enhances collective climate ambition among developing countries.

Challenges Limiting ISA's Effectiveness

1. Implementation Gap

- Despite an ambitious vision, many ISA initiatives remain at pilot or planning stages. Uneven on-ground implementation limits tangible outcomes, particularly for least-developed and small island member states.

2. Persistent Financing Constraints

- Large-scale capital mobilisation has been slower than expected. Continued reliance on traditional multilateral institutions and donor support dilutes ISA's financial autonomy and constrains its identity as a fully South-led platform.

3. Capacity Asymmetry among Members

- Wide disparities in institutional and technical capacity affect effective participation. Least-developed countries often require sustained hand-holding to utilise ISA programmes fully.

4. Limited Private Sector Integration

- Insufficient engagement with private investors and local entrepreneurs restricts scalability, innovation, and speed of solar deployment across member countries.

Conclusion

The International Solar Alliance represents a pioneering model of South–South cooperation in the global energy transition, shifting the narrative from aid-based climate action to partnership-driven solutions. While it has successfully created an institutional framework for cooperation, finance mobilisation, and knowledge sharing, its long-term impact will depend on deepening implementation, enhancing financial autonomy, and ensuring inclusive participation of all member states. Strengthening these dimensions can make ISA a cornerstone of an equitable and sustainable global energy transition.

Q20. “Nature-based Solutions are emerging as a critical strategy for addressing climate change and biodiversity loss, yet global financing remains severely inadequate.” Discuss the findings of the State of Finance for Nature 2026 and suggest measures to scale up NbS financing, with special reference to India.

(GS Paper – III: Environmental Pollution & Degradation, Conservation)

Introduction	The UNEP’s <i>State of Finance for Nature 2026</i> exposes a fundamental contradiction in global development finance: while ecosystems underpin economic and social stability, financial systems overwhelmingly fund activities that degrade nature. This imbalance threatens climate goals, biodiversity conservation, and long-term economic resilience.
Body	<p>Key Findings of the Report</p> <ol style="list-style-type: none">1. Severe Finance Imbalance<ul style="list-style-type: none">• For every USD 1 spent on protecting nature, nearly USD 30 flows into ecosystem-damaging activities such as fossil fuel extraction, deforestation, and unsustainable agriculture. Nature-negative finance reached USD 7.3 trillion in 2023, driven largely by harmful subsidies and private-sector investments.2. Underfunding of Nature-based Solutions (NbS)<ul style="list-style-type: none">• Global NbS investment stands at only USD 220 billion annually, with 90% coming from public sources. To meet the targets of the Rio Conventions (UNFCCC, CBD, UNCCD), funding must rise to USD 571 billion per year by 2030.3. Weak Private Sector Participation<ul style="list-style-type: none">• High due-diligence costs, long gestation periods, lack of standardised biodiversity metrics, and liquidity constraints discourage private investment, especially in the Global South. <p>Implications for India</p> <ul style="list-style-type: none">• Subsidy Paradox: Fertiliser and electricity subsidies encourage groundwater depletion and soil degradation.• Fiscal Federalism Challenge: States bear implementation costs but prioritise revenue-generating extractive activities.• High Economic Exposure: Over 50% of India’s workforce depends on nature-linked sectors, making ecosystem loss an economic risk. <p>Measures to Scale Up NbS Finance</p> <ul style="list-style-type: none">• Phase out nature-negative subsidies using the Nature Transition X-Curve approach.• Internalise environmental costs through carbon taxes and nature-liability levies.

	<ul style="list-style-type: none"> • Adopt TNFD-aligned mandatory disclosures to guide responsible investment. • Promote innovative instruments such as green bonds, biodiversity credits, and sustainability-linked loans. • De-risk private investment through first-loss guarantees and concessional finance. • Develop standard biodiversity metrics to prevent greenwashing. • Align national policies with the Kunming–Montreal Global Biodiversity Framework.
Conclusion	<p>The report underscores that environmental degradation is not a market failure but a policy failure. For India, scaling up NbS financing is essential to achieve climate resilience, protect livelihoods, and sustain long-term growth. A shift from nature-depleting to nature-positive development is no longer optional but imperative.</p>

S&T, Internal Security

Q21. India aims to become a semiconductor manufacturing hub. What are the challenges faced by the semiconductor industry in India? Mention the salient features of the India Semiconductor Mission.

(GS Paper III – Economic Development, Science & Technology)

Introduction	<p>India's semiconductor market, estimated at USD 38 billion in 2023, is expected to expand to USD 100–110 billion by 2030. The India Semiconductor Mission (ISM) reflects India's strategic intent to achieve technological self-reliance and strengthen its position in global high-tech value chains.</p>
Body	<p>Key Challenges Confronting India's Semiconductor Ecosystem</p> <p>1. Infrastructure and Utility Constraints</p> <ul style="list-style-type: none"> • Power Reliability Issues: Semiconductor fabrication requires uninterrupted, ultra-stable electricity (up to 99.9999% uptime), which remains difficult to ensure in many parts of India. • Limited Cleanroom Capacity: Advanced global fabs, such as those operated by TSMC, rely on Class 1 cleanrooms, whereas India has only a limited number of comparable facilities. • Logistics Bottlenecks: High-value semiconductor components move through congested ports, and India lacks a dedicated, high-

efficiency “chip corridor.”

- **Water Stress:** A single fabrication unit can consume nearly **10 million litres of water per day**, raising sustainability concerns, especially in water-scarce regions.
- **Testing and Validation Gaps:** India lacks advanced semiconductor testing infrastructure and continues to depend on facilities in Taiwan and the US for high-end validation.

2. Resource and Skill-Related Challenges

- **Dependence on Critical Materials:** India relies heavily on imported rare earth elements, with China controlling nearly **85% of global supply**.
- **Skilled Manpower Shortage:** Estimates suggest a shortfall of **250,000–350,000 semiconductor professionals by 2027**, particularly in chip design and fabrication.
- **High Capital Requirements:** Establishing a state-of-the-art fab can cost **USD 15–20 billion**, significantly higher than traditional manufacturing sectors.
- **Restricted Technology Access:** Export controls, especially on **sub-7 nm technologies**, limit India’s entry into cutting-edge semiconductor manufacturing.
- **Long Investment Horizon:** Semiconductor projects typically take **5–7 years** to generate returns, discouraging private investors who prefer faster-yield sectors like IT and startups.

Salient Features of the India Semiconductor Mission

Component	Allocation	Objective	Expected Value Addition
Manufacturing Incentives	₹62,900 crore	Setting up semiconductor fabs	~50% cost support, comparable to US & EU chip programs
Infrastructure Development	₹10,000 crore	Upgrading Mohali facility	Potential hub for compound semiconductors and R&D
Design Linked Incentive (DLI)	₹1,000 crore	Boosting chip design	Supports India’s growing fabless ecosystem

Strategic Focus Areas under ISM

- **Employment Creation:** Aimed at generating **around one million direct and indirect jobs** by 2026, leveraging India’s demographic advantage.

	<ul style="list-style-type: none"> • International Collaboration: Partnerships with global leaders from Taiwan, Korea, the US, and Japan to facilitate technology transfer and best practices. • State-Level Enablement: Gujarat’s Dholera and Karnataka’s design-centric clusters illustrate cooperative federalism in action. • Research and Innovation: Institutions such as IIT Madras and IISc Bengaluru are advancing work on indigenous fabrication technologies and compound semiconductors like GaN and SiC. • Supply Chain Localization: Emphasis on domestic production of wafers, chemicals, and testing services under the Atmanirbhar Bharat framework.
<p>Conclusion</p>	<p>India’s semiconductor ambitions are constrained by foundational challenges in infrastructure, resources, and human capital. However, sustained policy support through ISM, strategic global partnerships, and strengths in chip design and R&D provide a viable pathway for India to emerge as a credible alternative manufacturing hub and an important stakeholder in the rapidly expanding global semiconductor industry.</p>

Q22. “Examine how the evolution of NATGRID reflects the changing nature of internal security governance in India. Discuss its implications for privacy and democratic accountability.”

<p>Introduction</p>	<p>The 2008 Mumbai terror attacks marked a watershed moment in India’s internal security framework, exposing severe coordination failures among intelligence agencies. In response, the National Intelligence Grid (NATGRID) was envisioned as a technological solution to integrate disparate data systems and strengthen counter-terrorism capabilities.</p>
<p>Body</p>	<p>NATGRID and Internal Security Transformation</p> <ul style="list-style-type: none"> • Originally designed as a counter-terrorism platform, NATGRID enabled multiple security agencies to access and analyse data from various government databases. Over time, its scope has expanded significantly. What began as an exceptional security tool has increasingly become embedded in routine policing, with state-level agencies executing tens of thousands of queries each month. Its integration with the National Population Register has further shifted its function from monitoring specific threats to mapping entire populations. <p>Privacy and Democratic Concerns</p> <ul style="list-style-type: none"> • This transformation raises serious constitutional concerns. NATGRID operates without a dedicated statutory framework,

	<p>parliamentary approval, or independent oversight, despite the Supreme Court’s recognition of the Right to Privacy as a Fundamental Right in 2017. The use of facial recognition, entity resolution, and predictive analytics introduces risks of algorithmic bias, potentially reinforcing caste, religious, and regional prejudices under the guise of objectivity.</p> <p>Misplaced Technological Emphasis</p> <ul style="list-style-type: none"> • The reliance on expansive surveillance risks misdiagnosing India’s security challenges. The failures of 26/11 stemmed largely from institutional weaknesses—poor training, lack of coordination, and political interference—rather than insufficient data. Technological aggregation cannot substitute robust institutions and professional autonomy.
<p>Conclusion</p>	<p>NATGRID reflects a broader shift towards technologically driven security governance, but without democratic safeguards, it risks normalising surveillance and eroding civil liberties. Strengthening internal security must rest on transparent institutions, legal accountability, and independent oversight to ensure that national security does not come at the cost of constitutional democracy.</p>

Q23. Evaluate the role of the Ministry of Home Affairs in strengthening internal security and governance in India in recent years.

(GS Paper III – Governance, Internal Security)

<p>Introduction</p>	<p>Internal security is a foundational element of governance and national stability. In recent years, the Ministry of Home Affairs (MHA) has undertaken comprehensive reforms and operational measures to strengthen India’s internal security architecture while improving governance delivery through institutional, legal, and technological interventions.</p>
<p>Body</p>	<p>Containing Left-Wing Extremism (LWE)</p> <ul style="list-style-type: none"> • One of the most significant achievements of the MHA has been the near-elimination of Left-Wing Extremism under the Naxalmukt Bharat Abhiyan. A calibrated mix of intelligence-led operations, inter-state coordination, infrastructure development, and surrender–rehabilitation policies sharply reduced LWE violence and territorial influence. Major operations in areas such as Karreguttalu Hills and Narayanpur dismantled Maoist leadership and logistics, restoring state authority in long-affected tribal regions. <p>Strengthening Counter-Terrorism Framework</p>

	<ul style="list-style-type: none">• The MHA adopted a zero-tolerance approach to terrorism, reinforced through institutional and legal reforms. Platforms such as the Multi-Agency Centre (MAC), CCTNS, and NATGRID, along with amendments to UAPA, NIA Act, and PMLA, enhanced intelligence sharing and financial tracking. Targeted operations like Operation Sindoor and Operation Mahadev demonstrated a proactive posture against cross-border terrorism, while improved conviction rates reflected stronger investigation and prosecution capacity. <p>Cyber Security and Criminal Justice Reforms</p> <ul style="list-style-type: none">• Recognising emerging threats, the MHA strengthened cyber security through the Indian Cybercrime Coordination Centre (I4C) and innovations like e-Zero FIR, enabling faster response to digital crimes. Simultaneously, the introduction of new criminal laws marked a shift towards victim-centric, time-bound, and transparent justice, improving public confidence in the criminal justice system. <p>Holistic Governance and Regional Integration</p> <ul style="list-style-type: none">• Beyond security, the MHA contributed to governance through initiatives in border management, disaster resilience, narcotics control, North-East integration, and cooperative federalism via Zonal Councils. These measures linked security with development and social cohesion.
Conclusion	Overall, the Ministry of Home Affairs has played a decisive role in strengthening internal security while advancing governance reforms. However, sustaining these gains will require continued institutional accountability, respect for civil liberties, and inclusive development to ensure long-term stability and democratic resilience.

Q24. “Reusability represents a paradigm shift in space exploration, transforming it from a disposable, state-led activity into a sustainable, transportation-based commercial ecosystem.”

(GS Paper III – Science and Technology / Space Technology)

Introduction	For much of the twentieth century, space exploration followed a disposable and state-led model , where launch vehicles were used once and discarded after each mission. This approach made space access costly, infrequent, and resource-intensive. The emergence of reusable launch vehicle (RLV) technologies has brought about a paradigm shift by redefining rockets as reusable transportation systems, thereby laying the foundation for a sustainable, commercially driven space ecosystem .
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Body

1. Cost-effective Access to Space

- Reusability significantly lowers the cost per kilogram of payload by enabling the recovery and reuse of high-value rocket components, particularly the first stage. Unlike expendable rockets, where manufacturing costs are incurred for every launch, reusable systems distribute these costs over multiple missions. Demonstrated successes by private players such as **SpaceX** show that partial reusability can reduce launch costs several-fold while increasing launch frequency.

2. Overcoming Engineering and Physical Constraints

- Spaceflight is constrained by gravity, aerodynamic drag, and the mass penalty explained by the Tsiolkovsky rocket equation, which necessitates a very high proportion of propellant. Traditionally, staging mitigated this by discarding spent stages. Reusability builds on this principle by recovering stages after use, combining engineering efficiency with long-term economic gains.

3. Transition to a Transportation-based Model

- Reusable systems shift space operations from a “use-and-throw” approach to a **transportation paradigm**, similar to civil aviation. Technologies such as automated landings, retro-propulsion, and aerodynamic braking enable rapid refurbishment and redeployment, improving reliability and launch cadence.

4. Sustainability and Strategic Competition

- Reusability reduces material waste, ocean debris, and resource consumption, enhancing environmental sustainability. Globally, several countries and private firms are investing heavily in reusable systems. In this context, **ISRO**'s work on reusable launch vehicles and stage-recovery technologies is vital for India to remain competitive in the evolving commercial space market.

Conclusion

Reusability marks a **structural transformation in space exploration**, enabling cheaper, cleaner, and more frequent access to space. By lowering costs, improving sustainability, and fostering private participation, reusable launch vehicles are redefining space as a commercial transportation domain rather than an exclusive state activity. For emerging space powers like India, adopting reusability as a core design principle is essential for long-term strategic and economic relevance in the global space economy.

Q25. “While AI companions may alleviate individual loneliness, they pose serious ethical and societal risks.” Critically examine this statement in the context of emerging AI technologies.

(GS Paper III – Science & Technology, Developments and their applications and effects in everyday life; Awareness in the fields of Artificial Intelligence).

<p>Introduction</p>	<p>Advances in artificial intelligence have enabled the creation of AI companions that simulate emotional relationships. While they offer short-term relief from loneliness, their unchecked growth raises ethical, psychological, and social concerns.</p>
<p>Body</p>	<p>Benefits of AI Companions</p> <ul style="list-style-type: none"> • Provide emotional support during crisis situations • Offer accessibility where mental health services are absent • Assist isolated elderly or individuals with disabilities • Enable routine and cognitive engagement <p>Ethical and Social Risks</p> <ul style="list-style-type: none"> • Create emotional dependency and withdrawal from society • Reduce tolerance for human imperfections • Erode empathy, responsibility, and mutual obligation • Allow corporations to monetise intimacy and vulnerability • Enable subtle behavioural manipulation using personal data <p>Governance Challenges</p> <ul style="list-style-type: none"> • Lack of regulatory classification • No limits on emotional nudging or engagement maximisation • Data protection frameworks insufficient for emotional data • Risk of AI replacing human care in institutions <p>Way Forward</p> <ul style="list-style-type: none"> • Treat relationship AI as social infrastructure • Establish strict ethical design rules • Protect emotional data as sensitive personal data • Promote public-interest AI alternatives • Ensure AI supplements, not replaces, human care
<p>Conclusion</p>	<p>AI companions highlight the tension between technological convenience and social responsibility. Without robust regulation, they risk deepening isolation rather than healing it. The future of AI must strengthen human connection, not substitute it.</p>

Government Policies

Q26. “The right to die with dignity is an extension of the right to live with dignity.”

Critically examine in the context of euthanasia jurisprudence in India.

(GS Paper II - Government Policies & Interventions - Judiciary, Constitutional Interpretation - Fundamental Rights (Article 21))

Introduction	The Supreme Court’s recognition of the right to die with dignity reflects an evolving interpretation of Article 21 that prioritizes human dignity even at the end of life.
Body	<p>Judicial Evolution</p> <ul style="list-style-type: none">Initially rejected in <i>Gian Kaur (1996)</i>, the concept was revived through <i>Aruna Shanbaug (2011)</i> and firmly established in <i>Common Cause (2018)</i>, which legalized passive euthanasia and living wills. This marked a shift from mere biological survival to dignified existence. <p>Ethical Justification</p> <ul style="list-style-type: none">Allowing withdrawal of futile treatment respects autonomy, reduces suffering, and aligns with medical ethics. It prevents unnecessary prolongation of pain and economic distress. <p>Concerns and Limitations</p> <ul style="list-style-type: none">However, risks of coercion, unequal access, and weak consent mechanisms persist, especially in socioeconomically vulnerable groups. Absence of statutory law leaves doctors legally insecure. <p>Way Forward</p> <ul style="list-style-type: none">India needs a clear parliamentary framework, universal palliative care, and robust safeguards to balance dignity with protection.
Conclusion	Thus, the right to die with dignity is not a negation of life but an affirmation of its humane end.

Public Health

Q27. “The debate around the bandhgala uniform reflects deeper questions of decolonisation, cultural identity, and governance in India.” Critically examine.

(GS Paper I – Indian Heritage & Culture, Evolution of Indian court dress traditions)

Introduction	The recent decision to discontinue the bandhgala as a railway uniform has reopened debates on India's colonial legacy, indigenous traditions, and the symbolism of state institutions. Often mislabelled as colonial, the bandhgala is in fact a product of India's rich cultural synthesis and historical continuity.
Body	<p>1. Indigenous Origins and Cultural Synthesis</p> <ul style="list-style-type: none">• Originated in Jodhpur (Marwar) as a court garment.• Evolved from Mughal jama and angrakha blended with Rajput warrior aesthetics.• Represents India's adaptive cultural traditions rather than colonial imposition. <p>2. Colonial Encounter and Globalisation</p> <ul style="list-style-type: none">• British tailoring refined the bandhgala without erasing its Indian essence.• Polo and royal diplomacy globalised the Jodhpuri style.• Shows how Indian culture influenced Western fashion, reversing the colonial gaze. <p>3. Governance, Symbols, and Decolonisation</p> <ul style="list-style-type: none">• Uniforms represent authority and institutional identity.• Removing "colonial" symbols must be based on historical understanding, not perception.• True decolonisation requires reforming mindset and institutions, not just attire. <p>4. Ethics and Public Memory</p> <ul style="list-style-type: none">• State actions shape collective cultural memory.• Erasing indigenous symbols risks cultural amnesia.• Ethical governance demands respect for plural heritage while embracing modern functionality.
Conclusion	The bandhgala debate is not merely about clothing but about how India negotiates its past while shaping its administrative identity. Decolonisation must be reflective, inclusive, and historically informed rather than symbolic or cosmetic.

Q28. The return of the Piprawaha relics presents an opportunity to rethink heritage stewardship in India. Examine how historically informed museum practices and community participation can transform cultural repatriation into a tool for civilisational revival.

(GS Paper I (Art & Culture) - Buddhist stupas and relic traditions - Sanchi, Ashokan architecture, pilgrimage landscapes)

Introduction	<p>The partial reunification of the Piprawaha relics, ancient Buddhist gems associated with the historical Buddha, marks a significant moment in India's cultural repatriation journey. Beyond their physical return, the event raises deeper questions about how India should house, interpret, and transmit its sacred heritage in ways that respect historical traditions while engaging contemporary society.</p>
Body	<p>1. Historical Understanding of Relics as Living Heritage</p> <ul style="list-style-type: none">• In early Buddhist practice, relics were not aesthetic objects but spiritually potent entities that sanctified space and shaped devotion. After the Buddha's passing, his remains were divided, enshrined in vessels, and interred in stupas that functioned as reliquaries, ritual centres, and pedagogical spaces. This tradition highlights that relics derive meaning from context, ritual, and spatial design, not mere visibility. <p>2. Lessons from Sanchi and Early Indian Models</p> <ul style="list-style-type: none">• The Great Stupa at Sanchi demonstrates how architecture, carvings, circumambulatory paths, and monastic presence prepared devotees for meaningful engagement with relics. Similar symbolic strategies were adopted in rock-cut caves of peninsular India, proving that sacred presence could be conveyed even without physical remains. These precedents provide valuable templates for modern museums. <p>3. Need to Move Beyond Colonial Museology</p> <ul style="list-style-type: none">• Colonial museums reduced relics to inert objects behind glass vitrines, stripping them of ritual vitality. Repeating this model would undermine the civilisational meaning of the Piprawaha relics. Instead, museums must design spaces that allow contemplation, chanting, meditation, and interpretation, treating relics as living cultural entities. <p>4. Community Participation and Institutional Reform</p> <ul style="list-style-type: none">• Repatriation should catalyse reforms in heritage governance through interdisciplinary research, heritage education, and community engagement. Empowering local communities to document heritage and prevent illicit trafficking aligns stewardship with global ethical norms while decentralising protection.
Conclusion	<p>The return of the Piprawaha relics offers India a chance to redefine heritage stewardship from preservation to revival. By integrating historical wisdom, ethical museum practices, and community participation, India can transform repatriation into a powerful instrument of cultural continuity and global civilisational leadership.</p>

Q29. Recent studies indicate that a significant proportion of cattle-rearing households in India do not prioritise milk production. In this context, examine the major constraints faced by cattle-rearing households and discuss the implications of these findings for livestock policy in India.

(GS Paper I – Indian Society, Rural Livelihoods, Agriculture)

<p>Introduction</p>	<p>Recent findings by the Council on Energy, Environment and Water (CEEW) reveal that nearly 38% of India's cattle-rearing households—about 30 million—do not sell milk, challenging the conventional assumption that cattle rearing in India is primarily milk-centric. Instead, cattle are valued for multiple non-market functions, reflecting the complex realities of smallholder and climate-stressed rural livelihoods.</p>
<p>Body</p>	<p>Major Constraints Experienced by Cattle-Rearing Households</p> <ul style="list-style-type: none"> • One of the most pervasive constraints is the shortage and high cost of feed and fodder, reported by nearly three-fourths of rearers. Declining common grazing lands and limited land availability for fodder cultivation, particularly in eastern and northern states, further aggravate the problem. Small herd sizes, with half the households owning only one or two animals, restrict economies of scale and market participation. • Low adoption of scientific feeding interventions such as silage and ration balancing (around 5%) points to weak extension services, affordability issues and poor last-mile outreach. Additionally, low diversity in bovine type and breed increases vulnerability to climatic and economic shocks. Climate stress has already manifested in rising disease incidence, animal mortality and behavioural stress across buffaloes, crossbreds and indigenous cattle, compounding livelihood insecurity. <p>Implications for Livestock Policy in India</p> <ul style="list-style-type: none"> • These constraints highlight the limitations of uniform, milk-output-focused livestock policies. There is a clear need to move towards differentiated, region-specific and climate-responsive policies that recognise cattle as multi-functional assets—providing nutrition, manure, draught power, income security and cultural value. Policy priorities must include strengthening fodder supply chains, protecting grazing commons, improving veterinary and extension services, and supporting indigenous breeds within integrated farming systems.
<p>Conclusion</p>	<p>Recognising the diverse roles of cattle and aligning livestock policy with household realities is essential for enhancing rural resilience, improving</p>

policy effectiveness and ensuring sustainable and inclusive development of India's livestock sector.

Social Justice

Q30. How should India tackle the challenge of child trafficking?

(GS Paper I - Social issues: poverty, migration, child labour, exploitation - Vulnerable groups and social justice)

Introduction

Child trafficking is a grave violation of human rights and constitutional morality. Despite robust legal provisions, India continues to face low conviction rates and persistent exploitation, as highlighted by the Supreme Court in *K.P. Kiran Kumar vs State (2026)*. Tackling this crime requires a multi-dimensional approach combining law enforcement, social protection, and institutional reform.

Body

Legal and Constitutional Framework

- **International Commitment:** India is a signatory to the **Palermo Protocol (2000)**, which defines child trafficking broadly and makes **consent irrelevant** in such cases.
- **Domestic Law:** The **Bharatiya Nyaya Sanhita, 2023 (Section 143)** criminalises trafficking including sexual exploitation, forced labour, slavery, and organ removal.
- **Constitutional Safeguards:**
 - **Article 23:** Prohibits trafficking and forced labour.
 - **Article 24:** Bans child labour in hazardous industries.
 - **Article 39(e) & (f):** Protect children from abuse and exploitation.

Judicial Interventions

- **Vishal Jeet vs Union of India (1990):** Recognised trafficking as a socio-economic problem requiring a preventive approach.
- **Bachpan Bachao Andolan (2011):** Directed states to rescue and rehabilitate trafficked children.
- **K.P. Kiran Kumar Case (2026):** Declared trafficking a direct violation of Article 21 and mandated stricter enforcement.

Way Forward: Strengthening India's Response

1. Strengthen Social Protection

- Education, nutrition, and livelihood support for vulnerable families.
- Community vigilance systems at panchayat level.

	<p>2. Improve Law Enforcement</p> <ul style="list-style-type: none">• Special anti-trafficking units in every district.• Training police, prosecutors, and judiciary in child-sensitive procedures. <p>3. Increase Conviction Rates</p> <ul style="list-style-type: none">• Fast-track courts, witness protection, and forensic support.• Monitoring of case progress through digital dashboards. <p>4. Regulate Digital Platforms</p> <ul style="list-style-type: none">• Mandatory reporting of suspicious accounts.• Stronger IT Act enforcement against online recruitment. <p>5. Strengthen Rehabilitation</p> <ul style="list-style-type: none">• Trauma counselling, education, skill development, and reintegration.• Long-term monitoring of rescued children to prevent re-trafficking.
Conclusion	Child trafficking is not merely a law-and-order problem but a failure of social justice. India must move from reactive rescue to preventive governance , combining strong laws, empowered institutions, digital regulation, and social protection. Only a coordinated, child-centric and rights-based approach can ensure that every child lives with dignity, freedom, and security.

