

UPSC CSE (Main) 2024

General Studies Paper-III

- Q1.** Examine the pattern and trend of public expenditure on social services in the post-reform period in India. To what extent has this been in consonance with achieving the objective of inclusive growth?

(Answer in 150 words) [10]

Approach to Question:

- 1. Introduction:** Briefly introduce the significance of public expenditure in promoting social services and inclusive growth in the context of post-reform India.
- 2. Trends in Public Expenditure**
 - **Increased Investments:** Highlight the increase in spending on key sectors such as education and health.
 - **Specific Figures:** Provide recent statistics (e.g., budget allocations) to illustrate the growth in expenditure.
 - **Welfare Programs:** Mention targeted initiatives aimed at poverty alleviation and rural development.
- 3. Alignment with Inclusive Growth**
 - **Positive Impacts:** Discuss the benefits, such as improved literacy rates and healthcare access, supported by relevant data or programs.
 - **Challenges:** Identify existing issues, such as inadequate healthcare infrastructure and governance problems, that hinder effective implementation.
- 4. Conclusion:** Summarise the overall impact of public expenditure on inclusive growth, emphasising the need to address challenges for sustained improvement.

Answer:

The pattern of public expenditure on social services in India during the post-reform period (post-1991), reflects a shift towards enhancing welfare programs aimed at promoting inclusive growth.

Trends in Public Expenditure Post-Reform:

- 1. Increased Spending on Education and Health:** Investments rose to improve human capital. Education spending in 2023-24 reached ₹1.12 lakh crore, while health spending grew by 13%.

- 2. Targeted Welfare Programs:** Schemes like MGN-REGA and PM-KISAN focus on poverty alleviation and rural development, in line with inclusive growth goals.

Alignment with Inclusive Growth:

Positive Impact:

- 1. Education:** Literacy rose from 52.2% in 1991 to 77.7% in 2021, aided by initiatives like *Sarva Shiksha Abhiyan*.
- 2. Healthcare:** *Ayushman Bharat* will provide coverage to over 120 million families by 2022, reducing out-of-pocket costs.

Challenges:

- 1. Healthcare Infrastructure:** Rural areas still face shortages in healthcare facilities.
- 2. Low Fund Utilisation:** Delays and poor governance hinder effective usage of funds in health and education.

While public spending has advanced inclusive growth, gaps in governance and equitable distribution need addressing to ensure sustained progress.

- Q2.** What are the causes of persistently high food inflation in India? Comment on the effectiveness of the monetary policy of the RBI to control this type of inflation.

(Answer in 150 words) [10]

Approach to Question:

- 1. Introduction:** Begin with a brief statement on the significance of food inflation in India and its impact on citizens' standard of living.
- 2. Causes of Persistent High Food Inflation**
 - **Supply Chain Disruptions:** Discuss how logistical issues, weather events, and storage problems contribute to food shortages and rising prices.
 - **Rising Input Costs:** Explain how increased costs of fertiliser, fuel, and labour affect overall food prices.
 - **MSP Policies:** Mention the role of Minimum Support Prices in distorting supply and demand dynamics.

3. Effectiveness of RBI's Monetary Policy

- **Effective Measures:** Outline the strategies the RBI employs, such as rate adjustments, liquidity control mechanisms, and Open Market Operations.
- **Limitations:** Discuss the challenges faced by the RBI, such as slow policy transmission, structural inefficiencies in the agricultural sector, and external global factors.

4. **Conclusion:** Conclude by emphasising that while RBI's monetary policy plays a role in managing inflation, addressing the root causes of food inflation requires a multifaceted approach, including fiscal and agricultural reforms.

Answer:

Persistent high food inflation is a serious concern, as it directly impacts citizens' standard of living. Managing inflation is crucial for economic stability and well-being, especially for vulnerable populations.

Causes of Persistent High Food Inflation:

1. **Supply Chain Disruptions:** Delays in transportation, weather issues, and storage challenges cause supply shortages, increasing prices.
2. **Rising Input Costs:** Higher costs for fertiliser, electricity, and labour contribute to inflation. For instance, rising fuel prices raise transportation and production costs.
2. **MSP Policies:** Minimum Support Prices (MSP) promote over-cultivation of certain crops, distorting the supply-demand balance.

Effectiveness of RBI's Monetary Policy:

Effective Measures:

1. **Rate Adjustments:** The RBI adjusts repo rates to control borrowing costs and manage inflation.
2. **Liquidity Control:** Tools like CRR and SLR help manage excess money supply.
2. **Open Market Operations:** OMOs regulate liquidity, indirectly affecting inflation.

Limitations:

1. **Slow Transmission:** The effects of monetary policy take time to impact the economy.
2. **Structural Issues:** Supply chain inefficiencies and agricultural bottlenecks limit the policy's reach.
3. **External Factors:** Global price fluctuations and exchange rates weaken the RBI's control.

The RBI's monetary policy helps manage inflation but is limited in tackling food inflation, which requires coordinated fiscal and agricultural reforms.

- Q3. What were the factors responsible for the successful implementation of land reforms in some parts of the country? Elaborate.**

(Answer in 150 words) [10]

Approach to Question:

1. **Introduction:** Briefly introduce the context of land reforms in India.
2. **Key Factors:** List and elaborate on the main factors responsible for successful implementation.
3. **Conclusion:** Summarise the importance of these factors in achieving land reform objectives.

Answer:

Land reforms in India have been a pivotal part of socio-economic reforms, aimed at redistributing land to the landless and restructuring the agrarian system to reduce inequality. The successful implementation of land reforms in parts of India, like West Bengal, Kerala, and Jammu & Kashmir can be attributed to several factors.

Factors:

- **Pro-Poor Policies:** Governments in these states prioritised small and marginal farmers, enacting tenant-friendly laws to secure land ownership and reduce poverty.
- **Local Institutions:** Decentralised bodies like panchayats helped with land identification and redistribution, ensuring better grassroots implementation.
- **Land Ceiling Enforcement:** States like Kerala and Jammu & Kashmir rigorously enforced land ceiling laws, redistributing surplus land to landless farmers.
- **Public Mobilisation:** Farmers' unions and grassroots movements in states like West Bengal and Kerala created pressure for reforms, ensuring better outcomes.
- **Social Factors:** Regions with greater land inequality, such as West Bengal, had stronger demands for reform, driven by historical and social conditions.

Political will, strong institutions, and public mobilisation played a critical role in the successful implementation of land reforms in these regions.

- Q4. Explain the role of millets in ensuring health and nutritional security in India.**

(Answer in 150 words) [10]

Approach to Question:

1. **Introduction:** Briefly introduce millets as traditional grains and their significance in the Indian diet.
2. **Nutritional Profile:** Highlight their rich nutritional content, emphasising:
 - **High in Nutrients:** Mention proteins, vitamins, and minerals.
 - **Low Glycemic Index:** Discuss benefits for diabetes management and weight control.
3. **Sustainable Agriculture:** Explain the environmental benefits of millet cultivation:
 - **Drought Resistance:** Mention their adaptability to arid conditions.
 - **Crop Diversification:** Discuss how they promote biodiversity.

4. **Health Benefits:** Outline specific health advantages:
 - **Digestive Health:** Emphasise high fiber content.
 - **Heart Health:** Mention benefits related to cholesterol and cardiovascular health.
5. **Government Initiatives:** Reference initiatives promoting millet consumption, such as the International Year of Millets (2023).
6. **Conclusion:** Summarise the importance of millets in combating malnutrition and enhancing food security in India.

Answer:

Millets play a significant role in ensuring health and nutritional security in India due to their numerous health benefits and adaptability to various agro-climatic conditions. Here are some key aspects of their importance:

Nutritional Profile:

1. **Rich in Nutrients:** Millets are high in proteins, fiber, vitamins (especially B vitamins), and minerals (like iron and calcium), making them excellent for combating malnutrition.
2. **Low Glycemic Index:** They help control blood sugar levels, benefiting diabetics and aiding in weight management.

Sustainable Agriculture:

1. **Drought Resistance:** Millets require less water and thrive in arid regions, making them sustainable amid climate change.
2. **Crop Diversification:** They promote biodiversity and reduce reliance on staple crops.

Health Benefits:

1. **Digestive Health:** High fiber content aids digestion and prevents constipation.
2. **Heart Health:** Regular consumption can lower cholesterol levels and improve heart health.

Government Initiatives:

1. **Policy Support:** The government promotes millets through initiatives like the International Year of Millets (2023) to raise awareness and encourage usage.

Food Security:

1. **Diverse Options:** Millets enhance food security by providing nutritious and resilient food alternatives.

Millets are vital for health and nutritional security in India. Their rich nutrients, sustainability, health benefits, cultural significance, and government support make them essential in combating malnutrition and addressing food security challenges.

Q5. What is the present world scenario of intellectual property rights with respect to life materials? Although India is second in the world in filing patents, only a few have been commercialised. Explain the reasons behind this less commercialisation.

(Answer in 150 words) [10]

Approach to Question:

1. **Introduction:** Define IPRs and their significance in promoting innovation, especially in sectors like biotechnology and pharmaceuticals.
2. **Present World Scenario of IPRs on Life Materials**
 - Discuss global compliance with TRIPS and its implications for India.
 - Highlight initiatives to protect indigenous knowledge (e.g., Traditional Knowledge Digital Library).
 - Mention advancements in biotechnology, such as CRISPR-Cas9, to show the current trends in IPRs.
3. **Reasons for Low Commercialisation of Patents in India**

Identify key factors contributing to the issue:

 - **Regulatory Delays:** Explain how lengthy approval processes affect market entry.
 - **Challenges in IP Enforcement:** Discuss how weak enforcement mechanisms discourage commercialisation.
4. **Way Forward:** Suggest potential solutions to enhance commercialisation:
 - **Government Funding:** Propose increased financial support for research.
 - **Regulatory Reforms:** Advocate for streamlined processes to expedite approvals.
5. **Conclusion:** Summarise the importance of addressing these challenges for India to enhance its position in the global biotech industry.

Answer:

Intellectual Property Rights (IPRs) are vital for encouraging innovation and ensuring financial returns, particularly in sectors such as biotechnology and pharmaceuticals.

Present World Scenario of IPRs on Life Materials:

1. **Global Compliance with TRIPS:** India's commitment to the Trade-Related Aspects of Intellectual Property Rights (TRIPS) reflects the need to balance innovation with public health interests.
2. **Protection of Indigenous Knowledge:** Initiatives like the Traditional Knowledge Digital Library in India aim to safeguard local medicinal practices from being patented abroad.
3. **Biotechnological Innovation:** Patents for CRISPR-Cas9 gene-editing technology exemplify rapid progress in the biotechnology field.

Reasons for Low Commercialisation of Patents in India:

1. **Regulatory Delays and Inefficiencies:** Lengthy approval processes hinder timely market entry.

2. **Challenges in IP Enforcement:** Weak enforcement mechanisms diminish the incentives for commercialisation.

Way Ahead to Improve Commercialisation of Patents in India:

1. **Enhanced Government Funding and Incentives:** Increased financial support can boost research and development.
2. **Regulatory Reform for Efficiency:** Streamlining regulatory processes can lead to quicker approvals.

By addressing these critical issues, India can enhance the commercialisation of its intellectual property filings and establish itself as a leader in the global biotech industry.

Q6. What technology is being employed for electronic toll collection on highways? What are its advantages and limitations? What are the proposed changes that will make this process seamless? Would this transition carry any potential hazards?

(Answer in 150 words) [10]

Approach to Question:

1. **Introduction:** Provide a brief overview of electronic toll collection and its significance in modern highway systems. Mention its goal of automating toll payments to improve efficiency.
2. **Describe the Technology:** Outline the primary technologies used in ETC:
 - **RFID (Radio Frequency Identification):** Explain how vehicles use RFID tags for automatic toll deductions.
 - **ANPR (Automatic Number Plate Recognition):** Describe how cameras capture license plate information for billing.
 - **DSRC (Dedicated Short-Range Communications):** Mention how this technology facilitates communication between vehicles and toll systems.
3. **Advantages: Highlight key benefits of ETC:**
 - **Efficiency:** Discuss how it reduces congestion and enhances traffic flow at toll plazas.
 - **Convenience:** Explain the benefits of cashless transactions for drivers.
4. **Limitations:** Identify the limitations of ETC systems.
5. **Proposed Changes for Seamless Processing:** Suggest improvements to enhance the ETC experience.
6. **Conclusion:** Summarise the importance of addressing limitations and potential hazards to maximise the effectiveness of electronic toll collection.

Answer:

Electronic toll collection (ETC) on highways uses various technologies to facilitate automated toll payments, without the need for vehicles to stop.

Technology Employed for Electronic Toll Collection

1. **RFID (Radio Frequency Identification):** Vehicles carry RFID tags, allowing roadside readers to automatically deduct tolls.
2. **ANPR (Automatic Number Plate Recognition):** Cameras capture vehicle license plates, billing tolls based on identification.
3. **Dedicated Short Range Communications (DSRC):** Enables wireless communication between vehicles and roadside units.

Advantages

1. **Efficiency:** Reduces congestion at toll plazas, allowing for smoother traffic flow.
2. **Convenience:** Offers cashless transactions, making it easier for drivers to pay tolls.

Limitations

1. **High Initial Costs:** Significant investment needed for infrastructure.
2. **Privacy Concerns:** Potential misuse of collected data.

Proposed Changes for Seamless Process

1. **Interoperability:** Development of standards to ensure different ETC systems across states and countries can communicate with each other, allowing seamless travel.
2. **Integration with Navigation Systems:** Allowing GPS navigation systems to automatically calculate and suggest routes based on real-time toll prices.

While electronic toll collection systems present numerous advantages, including efficiency and convenience, careful consideration of their limitations and potential hazards is essential.

Q7. Industrial pollution of river water is a significant environmental issue in India. Discuss the various mitigation measures to deal with this problem and also the government's initiatives in this regard.

(Answer in 150 words) [10]

Approach to Question:

1. **Introduction:** Briefly state that industrial pollution is a significant environmental challenge in India, highlighting its impact on river water quality and the associated consequences.
2. **Key Issues Related to Industrial Pollution:** Summarise the primary consequences of industrial pollution.
3. **Mitigation Measures:** Outline effective strategies to combat industrial pollution.
4. **Government Initiatives:** Highlight significant government efforts to tackle pollution.

- Conclusion:** Reinforce the importance of coordinated efforts, including regulatory enforcement and technological innovation, to effectively address industrial pollution and protect India's rivers.

Answer:

Industrial pollution severely affects river water quality in India, impacting ecosystems, public health, and the economy. Article 48-A of the Indian Constitution emphasises the state's responsibility to protect the environment, underscoring the need for urgent action.

Industrial Pollution of River Water:

- Economic Consequences:** Pollution harms industries like fishing, agriculture, and tourism, leading to economic losses for dependent communities.
- Social and Cultural Impact:** Pollution exacerbates social disparities by affecting health and livelihoods, while also disrupting religious practices associated with rivers like the Ganga.
- Impact on Biodiversity:** Pollutants such as heavy metals and toxic chemicals disrupt aquatic ecosystems, leading to biodiversity loss and ecological imbalances.

Mitigation Measures:

- Effluent Treatment Plants (ETPs):** Industries must install ETPs to treat wastewater before discharge, thereby reducing pollution.
- Strict Monitoring and Enforcement:** Regular inspections and penalties for non-compliance are crucial for controlling pollution.

Government Initiatives:

- Namami Gange Program:** Focuses on cleaning the Ganga through treatment plants and reducing industrial effluents.
- Zero Liquid Discharge (ZLD) Norms:** Industries must treat and recycle wastewater, ensuring no discharge into rivers.

Combating industrial pollution of rivers requires strict enforcement, technological innovation, and community involvement. Coordinated efforts can safeguard India's rivers while balancing industrial growth with environmental protection.

- Q8. What role do environmental NGOs and activists play in influencing Environmental Impact Assessment (EIA) outcomes for major projects in India? Cite four examples with all important details.**

(Answer in 150 words) [10]

Approach to Question:

- Introduction:** Briefly define the role of environmental NGOs and activists in the context of EIAs. Emphasise their importance in shaping environmental policies and project evaluations.
- Key Contributions:** Highlight the main ways in which NGOs and activists influence EIA outcomes.

- Examples of Influence:** Provide specific examples of notable movements or campaigns.
- Conclusion:** Summarise the importance of ongoing collaboration among NGOs, communities, and regulatory bodies in improving the EIA process and ensuring environmental protection.

Answer:

Environmental NGOs and activists significantly shape Environmental Impact Assessment (EIA) outcomes by raising awareness, advocating for stricter regulations, providing scientific data, and engaging in legal actions.

Key Contributions:

- Scientific Data:** NGOs commission independent studies to challenge faulty EIA reports.
- Public Mobilisation:** Campaigns by NGOs increase public awareness and pressure governments and companies to reassess project impacts.

Examples of Influence:

- Narmada Bachao Andolan– Sardar Sarovar Dam**
 - Role:** Led by Medha Patkar, the movement raised concerns about displacement.
 - Impact:** Influenced rehabilitation policies and led to Supreme Court changes in the dam's assessments.
- Save Western Ghats Movement– Kasturirangan Report**
 - Role:** NGOs lobbied against deforestation in the Western Ghats.
 - Impact:** Resulted in the Gadgil and Kasturirangan reports, enforcing stricter regulations.
- Greenpeace India– Mahan Coal Block**
 - Role:** Highlighted flaws in EIA assessments for coal mining.
 - Impact:** Contributed to the coal block's cancellation in 2015 due to legal pressure.
- Save Hasdeo Aranya Movement– Coal Mining in Chhattisgarh**
 - Role:** Activists opposed coal mining due to biodiversity reasons.
 - Impact:** Delayed projects and improved EIA scrutiny.

Ongoing collaboration between NGOs, communities, and regulatory bodies is essential for improving EIA processes and fostering environmental stewardship amidst industrial growth.

- Q9. Explain how narco-terrorism has emerged as a serious threat across the country. Suggest suitable measures to counter narco-terrorism.**

(Answer in 150 words) [10]

Approach to Question:

- Introduction:** Briefly define narco-terrorism and its significance as a national security threat in India.
- Emergence as a Serious Threat:** Highlight key factors contributing to the rise of narco-terrorism.

3. **Measures to Counter Narco-Terrorism**
 - **Suggest targeted measures:** Enhanced Border Management, Community Engagement, Global Partnerships, etc.
4. **Conclusion:** Summarise the need for a coordinated approach to combat narco-terrorism effectively.

Answer:

Narco-terrorism, the convergence of narcotics trafficking and terrorism, poses a significant challenge to India's national security. It exploits societal vulnerabilities and economic opportunities, perpetuating violence and addiction.

How Narco-terrorism Has Emerged as a Serious Threat Across India:

1. **Geographical Issues:** India's location between the Golden Crescent and Golden Triangle, makes it a major transit route for drug trafficking, exacerbating the drug problem.
2. **Societal Deterioration:** The rise in drug addiction leads to societal decline, contributing to crime and destabilising communities.
3. **Corruption in Enforcement:** Corruption within law enforcement agencies hinders effective drug enforcement, allowing criminal networks to operate with impunity.
4. **Legislative Delays:** Slow judicial processes and outdated laws impede swift action against traffickers and terrorists, allowing criminal organisations to flourish.

Suitable Measures to Counter Narco-terrorism:

1. **Enhancing Border Management:** Improving border security with advanced surveillance and increased patrolling can help prevent drug trafficking.
2. **Community Engagement:** Raising awareness through community programmes can reduce drug dependency and promote preventive measures.
3. **Global Partnerships:** Strengthening collaborations with organisations like INTERPOL and UNODC enhances intelligence sharing and joint operations.

Addressing narco-terrorism in India requires a coordinated approach involving law enforcement, judicial reforms, community engagement, and international cooperation.

Q10. Describe the context and salient features of the Digital Personal Data Protection Act, 2023.**(Answer in 150 words) [10]****Approach to Question:**

1. **Introduction:** Briefly introduce the Act and its significance in the context of data privacy and the digital economy.
2. **Context:** Discuss the background that necessitated the Act:

- **Digital Economy Growth:** Mention the expansion of digital services and the consequent rise in data privacy concerns.
 - **Legal Precedent:** Refer to the Puttaswamy judgment that established the right to privacy as a fundamental right.
 - **Technological Advancements:** Highlight the impact of AI and data analytics on data management.
3. **Salient Features:** Outline key provisions of the Act.
 4. **Conclusion:** Summarise the Act's aim to protect personal data while fostering trust in the digital economy.

Answer:

The Digital Personal Data Protection Act, 2023, is landmark legislation aimed at enhancing data privacy in India, addressing the complexities of data management in the digital age.

Context of the Digital Personal Data Protection Act, 2023:

1. **Growing Digital Economy and Privacy Concerns:** The expansion of India's digital economy has raised significant data privacy issues, necessitating comprehensive legislation.
2. **Recognition of Right to Privacy:** The *Puttaswamy judgment* (2017) recognised privacy as a fundamental right, highlighting the need for protective legislation.
3. **Rapid Advancements in Technology:** The rise of AI and data analytics underscores the need for a modern legal framework to address emerging challenges.

Salient Features of the Digital Personal Data Protection Act, 2023:

1. **Legal Definitions and Frameworks:** The Act provides clear definitions of personal data and processing, establishing a comprehensive framework.
 2. **Data Protection Officer Requirement:** Organisations are required to appoint a Data Protection Officer (DPO) to ensure compliance.
 3. **Regulatory Authority Establishment:** The Data Protection Board of India will oversee compliance and address grievances.
 4. **Protection of Children's Data:** Specific provisions require parental consent for processing children's data.
- The Digital Personal Data Protection Act, 2023, aims to safeguard personal data while fostering trust in India's digital economy through a robust regulatory framework.

Q11. Discuss the merits and demerits of the four 'Labour Codes' in the context of labour market reforms in India. What has been the progress so far in this regard?**(Answer in 250 words) [15]**

Approach to Question:

1. **Introduction:** Introduce the context of labour market reforms in India and mention the consolidation into four Labour Codes.
2. **Merits of the Four Labour Codes:** Highlight key benefits of the new Codes, ensuring to mention at least three specific advantages.
3. **Demerits of the Four Labour Codes:** Discuss the challenges or drawbacks associated with the implementation of these Codes, providing specific examples.
4. **Progress So Far:** Briefly summarise the progress made in implementing the Labour Codes and any ongoing challenges.

Answer:

India's fragmented labour laws have been consolidated into four Labour Codes: The Code on Wages, Industrial Relations Code, Social Security Code, and the Occupational Safety, Health, and Working Conditions Code. This reform aims to streamline regulations, enhance worker welfare, and promote industrial harmony.

Merits of the Four Labour Codes

1. **Simplified Compliance:** Consolidating over 29 laws into four Codes reduces compliance complexity, making it easier for employers to follow regulations and for workers to understand their rights.
2. **Strengthening Worker Rights:** The Codes address gaps noted by the 2nd National Commission on Labour (2002), ensuring fair wages and better working conditions in line with Article 43 of the Constitution.
3. **Expanded Social Security:** The Social Security Code enhances benefits for a broader range of workers, including those in the informal sector, thus improving overall worker welfare.

Demerits of the Four Labour Codes

1. **Unclear Definitions:** Some provisions are vague, leading to possible misinterpretations and inconsistent applications, causing confusion among stakeholders.
2. **Low Awareness and Implementation:** Many in the informal sector are unaware of the new laws, which hampers effective implementation and compliance.
3. **Impact on Informal Workers:** Informal sector workers may not fully benefit due to weak enforcement and lack of registration.

Progress So Far

1. **Stakeholder Consultations:** The government has engaged in extensive discussions with various stakeholders to gather feedback and build support for the reforms.
2. **Awareness Deficits:** Low awareness levels hinder the effectiveness of the reforms, necessitating educational initiatives to inform all parties involved.
3. **Enforcement Challenges:** Significant issues remain in enforcing the new laws, as many employers and workers struggle with the transition.

A balanced approach is essential to ensure that the needs of all workers, especially those in the informal sector, are met. With proper execution, these reforms can significantly enhance worker welfare and foster economic growth.

Q12. What is the need to expand the regional air connectivity in India? In this context, discuss the government's UDAN Scheme and its achievements.

(Answer in 250 words) [15]

Approach to Question:

1. **Introduction:** Briefly introduce the importance of regional air connectivity in India.
2. **Need for Expanding Regional Air Connectivity:** Discuss at least three specific reasons highlighting why improving regional air connectivity is essential.
3. **Government's UDAN Scheme:** Introduce the UDAN Scheme and its objectives.
4. **Achievements of the UDAN Scheme:** Highlight significant achievements of the scheme, mentioning specific examples.
5. **Conclusion:** Summarise the ongoing need for improvements and the future of regional air connectivity.

Answer:

India's geographic diversity and economic potential require improved regional air connectivity to foster inclusive growth. The UDAN (Ude Desh ka Aam Nagrik) Scheme aims to make air travel affordable and accessible, particularly in underserved areas.

Need for Expanding Regional Air Connectivity in India

1. **Economic Development Boost:** Enhanced air connectivity stimulates local economies. For example, Kannur Airport in Kerala has improved access, attracting investment and tourism.
2. **Tourism Sector Growth:** Reviving regional airports boosts tourism. Dibrugarh Airport in Assam has increased tourist traffic to Northeast India, benefiting local businesses.
3. **Job Creation:** Expanding air travel generates jobs in aviation, hospitality, and related sectors, contributing to economic growth.
4. **Educational Opportunities:** Better air connectivity allows students in remote areas access to educational institutions, promoting skill development.
5. **Support for Local Economies:** Regional air connectivity helps local businesses reach wider markets, as seen with Bagdogra Airport, which supports local tea growers.

Government's UDAN Scheme and Its Achievements

1. **Affordable Travel:** The UDAN scheme has significantly lowered airfares, making air travel accessible to more people.

2. **Equitable Development:** The scheme promotes balanced regional development by focusing on underserved regions.
3. **State Collaborations:** States like Odisha have actively collaborated with the central government to enhance air connectivity.
4. **Airline Participation:** The competitive framework encourages airlines like GoAir to expand services to new routes.

Way Ahead for Expanding Regional Air Connectivity in India

1. **Operational Coordination:** Enhancing coordination among government departments and airlines will improve service delivery.
2. **Financial Model Improvement:** Developing sustainable financial models, including incentives for airlines in underserved areas, is essential.
3. **Balanced Regional Development Policies:** Policies prioritising connectivity in remote regions will promote equitable growth.

The UDAN scheme has made significant strides in regional air connectivity, but ongoing improvements in infrastructure and policy are vital to maximise its benefits for national development.

Q13. What are the major challenges faced by Indian irrigation system in recent times? State the measures taken by the government for efficient irrigation management.

(Answer in 250 words) [15]

Approach to Question:

1. **Introduction:** Briefly state the importance of the irrigation system in India.
2. **Major Challenges Faced:** List and explain three to four key challenges impacting the irrigation system.
3. **Government Measures:** Detail at least three measures taken by the government to improve irrigation management.
4. **Conclusion:** Summarise the need for ongoing efforts to tackle the challenges faced by the irrigation system.

Answer:

The Indian irrigation system plays a crucial role in supporting the country's agricultural sector, which employs a significant portion of the population and is vital for food security.

Major Challenges Faced by the Indian Irrigation System

1. **Water Scarcity:** India faces acute water scarcity due to over-extraction of groundwater, erratic rainfall patterns, and increasing demand from various sectors. Many regions experience drought, leading to inadequate irrigation.

2. **Aging Infrastructure:** Many irrigation systems are outdated and poorly maintained, resulting in water loss through leaks and inefficient distribution. The existing canal systems often require modernisation.
3. **Pollution and Degradation:** Pollution from industrial discharge and agricultural runoff contaminates water bodies, reducing the quality of irrigation water. Soil degradation from overuse of fertiliser and chemicals also impacts agricultural yield.
4. **High Costs of Irrigation:** The rising costs of maintaining irrigation systems and accessing groundwater deter farmers, especially smallholders, from investing in efficient irrigation practices.

Measures Taken by the Government for Efficient Irrigation Management

1. **Pradhan Mantri Krishi Sinchai Yojana (PMKSY):** Launched to ensure access to adequate and reliable irrigation for all agricultural lands, focusing on creating new irrigation sources and improving existing systems.
2. **National Agriculture Market (eNAM):** This online trading platform enhances farmers' access to markets and ensures fair pricing, reducing dependency on irrigation for certain crops.
3. **Micro-Irrigation Schemes:** Initiatives like drip and sprinkler irrigation are promoted to improve water use efficiency. The government provides subsidies to encourage farmers to adopt these technologies.
4. **River Linking Projects:** The government is exploring the interlinking of rivers to address regional water scarcity and ensure the equitable distribution of water resources.

While the Indian irrigation system faces significant challenges, the government has initiated various measures to promote efficient irrigation management. Continued focus on modernisation, sustainable practices, and improved coordination will be essential to address these challenges effectively.

Q14. Elucidate the importance of buffer stocks for stabilising agricultural prices in India. What are the challenges associated with the storage of buffer stock? Discuss.

(Answer in 250 words) [15]

Approach to Question:

1. **Introduction:** Briefly introduce the concept of buffer stocks. Mention their significance in the Indian agricultural context, emphasising the need for price stabilisation.
2. **Importance of Buffer Stocks:**
 - **Price Stabilisation:** Explain how buffer stocks help regulate market prices during fluctuations.

- **Food Security:** Discuss their role in ensuring food availability during shortages or emergencies.
 - **Support for Farmers:** Describe how they protect farmers from price volatility by providing a reliable market.
 - **Inflation Control:** Highlight their contribution to controlling inflation by stabilising the prices of essential commodities.
3. **Challenges Associated with Storage**
- **Inadequate Storage Infrastructure:** Discuss the issues related to insufficient storage facilities leading to wastage.
 - **High Maintenance Costs:** Explain how the costs of maintaining buffer stocks can strain government resources.
 - **Risk of Overproduction and Waste:** Mention the dangers of excessive buffer stocks leading to inefficiencies.
 - **Limited Awareness:** Address how the lack of knowledge among farmers about buffer stock policies can hinder their effectiveness.
4. **Conclusion:** Summarise the importance of addressing the challenges associated with buffer stock management. Emphasise the need for strategic investments and policies to enhance stability and sustainability in agriculture.

Answer:

Buffer stocks are vital for stabilising agricultural prices in India, where agriculture is crucial for the economy and livelihoods.

Importance of Buffer Stocks for Stabilising Agricultural Prices in India

1. **Price Stabilisation:** Buffer stocks help stabilise prices by maintaining reserves. When prices drop, the government can release stocks to increase supply, preventing drastic declines. Conversely, during shortages, they can control rising prices, ensuring fair compensation for farmers.
2. **Food Security:** Buffer stocks ensure food security during lean seasons or emergencies, preventing famine and ensuring access to food for vulnerable populations.
3. **Support for Farmers:** Buffer stocks protect farmers from price volatility. By purchasing excess produce during harvests, the government provides a reliable market, encouraging investment in production.
4. **Inflation Control:** Buffer stocks help control inflation by stabilising essential commodity prices. Releasing stocks during price surges eases inflationary pressures, making goods more affordable.

Challenges Associated with the Storage of Buffer Stock

1. **Inadequate Storage Infrastructure:** Insufficient storage facilities lead to spoilage and pest infestations, resulting in wastage.

2. **High Maintenance Costs:** Maintaining buffer stocks incurs significant costs, straining government budgets and limiting investments in agricultural development.
3. **Risk of Overproduction and Waste:** Excessive buffer stocks can lead to waste if not effectively managed.
4. **Limited Awareness:** Many farmers lack awareness of government buffer stock policies, leading to underutilisation of support mechanisms.

Addressing these issues through strategic investments and improved policies will enhance buffer stock management, contributing to agricultural stability and sustainability.

Q15. The world is facing an acute shortage of clean and safe freshwater. What are the alternative technologies that can solve this crisis? Briefly discuss any three such technologies, citing their key merits and demerits.

(Answer in 250 words) [15]

Approach to Question:

1. **Introduction:** Briefly introduce the issue of freshwater scarcity and its global significance.
2. **Reasons for Freshwater Shortage:** Mention key factors contributing to the crisis, such as agricultural demand, climate change, over exploitation of groundwater, and urbanisation.
3. **Alternative Technologies:** List the alternative technologies that can help mitigate the freshwater crisis.
4. **Discussion of Three Technologies:** For each technology, including its merits and demerits, along with real-world examples to illustrate their application.
5. **Conclusion:** Summarise the need for integrated approaches to tackle freshwater scarcity effectively.

Answer:

Freshwater scarcity is a critical global challenge, influenced by natural and human factors. The United Nations recognises access to clean water and sanitation under Sustainable Development Goal 6 (SDG-6), emphasising the urgency of addressing this issue. "By 2025, half of the world's population could be living in water-stressed areas (UN Water)."

Reasons Why the World is Facing an Acute Shortage of Clean and Safe Freshwater:

1. **Agricultural Demand:** The need for irrigation in agriculture places additional pressure on limited water supplies.
2. **Climate Change:** Changing weather patterns result in erratic rainfall, droughts, and flooding, affecting water availability.
3. **Overexploitation of Groundwater:** Excessive withdrawal of groundwater for irrigation and urban use depletes aquifers faster than they can be replenished.

4. **Rapid Urbanisation:** Increased urban development strains existing water infrastructure and management systems.

Alternative Technologies to Solve the Water Crisis

1. Desalination Technologies
2. Greywater Recycling
3. Rainwater Harvesting
4. Fog Harvesting
5. Wastewater Treatment and Reuse

Three Technologies with Merits and Demerits

Desalination

1. **Merits:** Provides a reliable source of freshwater, especially in arid regions.
2. **Demerits:** High energy consumption and environmental concerns over brine disposal.
3. **Example:** The Jubail Desalination Plant in Saudi Arabia supplies a significant amount of potable water.

Rainwater Harvesting

1. **Merits:** Cost-effective and reduces reliance on groundwater.
2. **Demerits:** Limited by geographic conditions and require maintenance.
3. **Example:** The Chennai Rainwater Harvesting Project in India helps lessen municipal water dependence.

Wastewater Recycling and Reuse

1. **Merits:** Treats and reuses wastewater, promoting sustainability.
2. **Demerits:** High initial costs and potential public resistance.
3. **Example:** The Orange County Water District in California effectively reuses treated wastewater for groundwater replenishment.

Combating freshwater scarcity requires a holistic approach that integrates advanced technologies with robust policy frameworks and community engagement. By investing in innovative solutions and fostering public awareness, we can work towards sustainable water management and ensure access to clean water for all.

Q16. What are asteroids? How real is the threat of them causing extinction of life? What strategies have been developed to prevent such a catastrophe?

(Answer in 250 words) [15]

Approach to Question:

1. **Introduction:** Define asteroids and provide a brief overview of their characteristics.
2. **Threat of Asteroids Causing Extinction:** Discuss historical evidence of asteroid impacts and their consequences on life. Explain the likelihood of future impacts, differentiating between small and large asteroids.

3. Strategies to Prevent Catastrophe

- Outline monitoring and detection efforts, including space missions and telescopes.
- Discuss international collaboration and agreements.
- Mention public awareness and emergency preparedness initiatives.

4. **Conclusion:** Summarise the importance of continued vigilance and the development of strategies to mitigate risks.

Answer:

Asteroids are rocky or metallic objects that orbit the Sun, primarily within the asteroid belt between Mars and Jupiter. These bodies are considered remnants from the early solar system and vary in size from a few meters to several hundreds of kilometres in diameter. Composed of metals and minerals, they can have irregular shapes and diverse surface features. Though most asteroids are found in the asteroid belt, they can also exist in other regions of space.

Threat of Asteroids Causing Extinction

Historical Context: Chicxulub Impact

1. Asteroids pose a real threat, as evidenced by the Chicxulub impact event around 66 million years ago, which likely contributed to the extinction of the dinosaurs. This event caused significant climate changes and ecological disruptions.

Probability of Impact

1. **Frequent Small Impacts:** Smaller asteroids (under 25 metres) frequently enter the atmosphere but usually disintegrate before reaching the Earth's surface.
2. **Rare Large Impacts:** Larger asteroids (over 140 metres) are less common, with significant impacts estimated to occur every thousands to millions of years, potentially leading to mass extinctions.

Strategies to Prevent Catastrophe

Monitoring and Detection

1. **Surveys and Telescopes:** NASA's Near-Earth Object Observations (NEOO) and other international programs track and identify near-Earth objects (NEOs) to assess their potential threat.
2. **Space Missions:** Missions like NASA's NEOWISE and ESA's Hera study asteroids to enhance detection capabilities.

International Collaboration

1. **Global Agreements:** Initiatives by the UN promote cooperation in planetary defence and information sharing.
2. **Research Collaboration:** Countries work together to improve asteroid detection and mitigation strategies.

Public Awareness and Preparedness

1. **Education Campaigns:** Raising awareness about asteroid threats helps prepare communities for potential risks.

2. **Emergency Response Planning:** Developing evacuation and disaster response plans is crucial for mitigating the effects of potential impacts.

The threat of asteroid impacts is significant, but ongoing research, monitoring, and international collaboration are vital for risk mitigation. As technology improves, strategies for preventing catastrophic impacts continue to evolve, enhancing global preparedness.

Q17. What is disaster resilience? How is it determined? Describe various elements of a resilience framework. Also mention the global targets of Sendai Framework for Disaster Risk Reduction (2015-2030).

(Answer in 250 words) [15]

Approach to Question:

1. **Introduction:** Define disaster resilience and its importance.
2. **How Disaster Resilience is Determined:** Outline the key factors used to assess disaster resilience.
3. **Elements of a Resilience Framework:** Describe various components that make up a resilience framework.
4. **Global Targets of the Sendai Framework:** List and briefly explain the seven global targets outlined in the Sendai Framework.
5. **Conclusion:** Summarise the importance of disaster resilience and the role of the Sendai Framework in promoting it.

Answer:

Disaster resilience is the ability of individuals, communities, and systems to anticipate, prepare for, respond to, and recover from disasters. It encompasses not only physical capacity but also social, economic, and institutional factors that influence effective management of adverse events.

How is Disaster Resilience Determined?

Disaster resilience is assessed through several key factors:

1. **Vulnerability Assessment:** This involves evaluating the susceptibility of individuals, communities, and infrastructure to hazards by analysing socio-economic factors and institutional capacities.
2. **Preparedness Levels:** This measures the extent of established plans, resources, and training for emergency response and recovery.
3. **Community Engagement:** This refers to participation and collaboration among community members, organisations, and government in disaster planning and response.

Elements of a Resilience Framework

A resilience framework typically includes the following components:

1. **Risk Assessment:** Identifying and analysing hazards and vulnerabilities to understand potential impacts.

2. **Preparedness Planning:** Developing response plans and training programs to prepare communities for potential disasters.

3. **Capacity Building:** Enhancing the skills, resources, and overall disaster management capabilities of individuals and organisations.

4. **Early Warning Systems:** Implementing reliable systems for providing timely information about imminent threats.

Global Targets of the Sendai Framework for Disaster Risk Reduction (2015-2030)

The Sendai Framework outlines seven global targets:

1. **Target A:** Reduce global disaster mortality by 2030 to minimize lives lost.
2. **Target B:** Reduce the number of affected people globally by 2030.
3. **Target C:** Lower direct economic losses relative to GDP from disasters.
4. **Target D:** Decrease damage to critical infrastructure and disruption of essential services.
5. **Target E:** Increase countries with national and local disaster risk reduction strategies by 2020.
6. **Target F:** Enhance international cooperation for disaster risk reduction in developing countries.
7. **Target G:** Promote access to multi-hazard early warning systems and disaster risk information.

These targets aim to build a more resilient global community through improved disaster risk management.

Q18. Flooding in urban areas is an emerging climate-induced disaster. Discuss the causes of this disaster. Mention the features of two such major floods in India over the last two decades. Describe the policies and frameworks in India that aim to tackle such floods.

(Answer in 250 words) [15]

Approach to Question:

1. **Introduction:** Briefly introduce urban flooding as a climate-induced disaster and its implications.
2. **Causes of Urban Flooding:** Identify and explain the primary causes that contribute to urban flooding.
3. **Major Flood Events:** Describe two significant flood events in India within the last two decades, highlighting their features and impacts.
4. **Policies and Frameworks:** Discuss relevant policies and frameworks in India designed to manage and mitigate urban flooding.
5. **Conclusion:** Summarise the importance of addressing urban flooding through effective policies and better urban planning.

Answer:

Urban flooding is an escalating climate-induced disaster in India, driven by unplanned urbanisation and climate change. It disrupts daily life, damages infrastructure, and hampers economic activity.

Urban Flooding as a Climate-Induced Disaster:

1. **Extreme Rainfall Events:** Climate change has intensified heavy rainfall, leading to more frequent and severe flooding events..
2. **Poor Urban Planning:** Inadequate drainage systems and rapid urban sprawl exacerbate flooding.
3. **Encroachment on Water Bodies:** Urbanisation has significantly reduced the area of natural drainage, leading to more frequent inundation.
4. **Impervious Surfaces:** Roads and buildings prevent water absorption, contributing to surface runoff.
5. **Rising Sea Levels:** Coastal cities are increasingly vulnerable to storm surges and higher tide levels due to rising sea levels.
6. **Vulnerable Populations:** Low-lying settlements are the most affected, as they are more prone to flooding and have fewer resources for mitigation.

Causes of Urban Flooding:

1. **Rapid Urbanisation:** Unplanned construction increases flood risk by hindering water absorption.
2. **Frequent Heavy Rainfall: Example:** The 2015 Chennai floods saw 490 mm of rain in a day, overwhelming drains.
3. **Encroachment:** Filling water bodies disrupts drainage, leading to flooding.
4. **Waste Management:** Blocked drains, from improper waste, intensify flooding.
5. **Outdated Infrastructure:** Example: Hyderabad floods (2020) overwhelmed old drainage systems.

Major Floods in the Last Two Decades:

1. **Chennai Floods (2015):** Intense rainfall and reservoir releases submerged large areas.
2. **Hyderabad Floods (2020):** Heavy rains and poor drainage caused widespread damage.

Policies to Tackle Urban Flooding:

1. **National Water Mission (NWM):** Focuses on water conservation and rainwater harvesting.
2. **Disaster Management Act, 2005:** Provides a legal framework for disaster response.
3. **National Disaster Management Plan (NDMP), 2016:** Emphasises flood risk reduction and early warning systems.
4. **CWC Guidelines:** Suggest improvements in urban flood management.
5. **Judicial Oversight:** Courts have intervened to remove encroachments on water bodies.

Addressing urban flooding requires improved urban planning, disaster preparedness, and sustainable infrastructure to mitigate climate-induced risks.

Q19. India has a long and troubled border with China and Pakistan, fraught with contentious issues. Examine the conflicting issues and security challenges along the border. Also, give out the development being undertaken in these areas under the Border Area Development Programme (BADP) and Border Infrastructure and Management (BIM) Scheme.

(Answer in 250 words) [15]

Approach to Question:

1. **Introduction:** Briefly introduce India's border situation with China and Pakistan, highlighting the historical context and ongoing tensions.
2. **Conflicting Issues and Security Challenges:** Outline the main security challenges associated with both borders, providing specific examples for each.
3. **Development Initiatives:** Discuss the key developments undertaken under the BADP and BIM schemes, focusing on infrastructure and community-centric projects.
4. **Conclusion:** Summarise the importance of these initiatives in addressing security challenges and fostering development.

Answer:

India shares extensive borders with China (3,488 km) and Pakistan (3,323 km), both of which have been sources of long-standing geopolitical tensions, military confrontations, and complex security challenges.

Conflicting Issues and Security Challenges Along the India-Pakistan Border:

1. **Territorial Disputes:** The long-standing conflict over the Kashmir region has been at the centre of the India-Pakistan rivalry, leading to multiple wars and military standoffs.
2. **Narcotics Trafficking:** The smuggling of drugs, particularly heroin, from Pakistan into India through the Punjab border is a significant security threat, fuelling criminal activities and local unrest.

Conflicting Issues and Security Challenges Along the India-China Border:

1. **Undefined and Disputed Line of Actual Control (LAC):** The India-China border remains poorly demarcated, leading to territorial disputes and clashes, like the 2020 Galwan Valley incident, which escalated military tensions.
2. **Strategic Locations:** The proximity of the Siliguri Corridor (the "Chicken's Neck"), which connects India's northeastern states to the rest of the country, makes it a vulnerable strategic point.

Developments Undertaken Under the Border Area Development Programme (BADP):

1. **Enhancement in Infrastructure:** The construction of roads, bridges, and border outposts in remote

areas has been a key focus, improving connectivity and enabling better military and civilian mobility.

2. **Community-Centric Projects:** BADP encourages community-based initiatives, such as the development of local markets, village electrification, and drinking water facilities, to uplift marginalised border communities.

Developments Undertaken Under the Border Infrastructure and Management (BIM) Scheme:

1. **Improved in Road and Telecom Connectivity:** Expanded road networks and upgraded telecom facilities enable better coordination and quicker troop mobilisation.
2. **Construction of Integrated Check Posts (ICPs):** ICPs at key border crossings regulate trade and movement, enhancing border management and boosting economic activity.

Despite ongoing tensions, both BADP and BIM schemes contribute to improving infrastructure, security, and socio-economic growth, which are essential for border stability.

Q20. Social media and encrypting messaging services pose a serious security challenge. What measures have been adopted at various levels to address the security implications of social media? Also, suggest any other remedies to address the problem.

(Answer in 250 words) [15]

Approach to Question:

1. **Introduction:** Start with a brief overview of the dual nature of social media and encrypted messaging services, emphasising both their benefits and the security challenges they present.
2. **Identify Security Challenges:** Clearly outline the key security challenges associated with social media, such as misinformation, data privacy issues, and cyberbullying.
3. **Measures Adopted:** Discuss specific measures taken at various levels (government, community, and platform) to mitigate these challenges. Include legislation, regulatory frameworks, public awareness campaigns, and privacy protections.
4. **Other Remedies:** Suggest additional strategies that could further address the security issues, such as promoting digital literacy and supporting digital well-being.

5. **Conclusion:** Summarise the need for a comprehensive approach to effectively tackle the security implications of social media.

Answer:

In today's digital age, social media and encrypted messaging services have transformed communication, providing unparalleled connectivity and privacy. However, they also pose significant security challenges, impacting national security, privacy, and the spread of misinformation.

Ways in which social media and Encrypted Messaging Services Pose a Serious Security Challenge:

1. **Spread of Misinformation and Fake News:** The rapid dissemination of false information can lead to public panic, polarisation, and undermining trust in institutions.
2. **Data Privacy Concerns:** Personal data can be harvested and misused, leading to privacy violations and potential security risks for individuals.
3. **Cyberbullying and Online Harassment:** Social media can serve as a platform for harassment, affecting mental health and safety, particularly among vulnerable populations.

Measures Adopted to Address the Security Implications of Social Media:

1. **Legislation and Regulatory Frameworks:** Laws like India's IT Rules 2021 establish accountability for social media platforms in terms of content moderation and user data protection.
2. **Public Awareness Campaigns:** Initiatives such as Safer Internet Day promote safe online practices and educate users about potential risks.
3. **Enhanced Privacy Protections:** Stricter regulations are being enforced to ensure user data privacy and security.

Other Remedies to Address the Problem:

1. **Promotion of Digital Literacy:** Educating users on digital media, critical thinking, and how to identify misinformation can empower them to navigate online spaces more safely.
2. **Support for Digital Well-being:** Initiatives aimed at promoting healthy online habits can help mitigate the negative effects of social media on mental health.

While social media and encrypted messaging services provide numerous benefits, they also present significant and complex security and privacy challenges. Addressing these issues requires a balanced approach that includes legislative, technological, and educational strategies.