Q1. Explain intra-generational and inter-generational issues of equity from the perspective of inclusive growth and sustainable development. (150 words) [10]

Approach to question:

Intra-generational and inter-generational issues of equity play a crucial role in the context of inclusive growth and sustainable development. Here are the key points highlighting these concerns:

Intra-generational issues of equity:

1. **Income inequality:** Disparities in income distribution within the same generation hinder inclusive growth and sustainable development.

2. **Social exclusion:** Marginalized communities and vulnerable groups face barriers that impede their access to resources and opportunities.

Inter-generational issues of equity:

1. **Intergenerational poverty:** Unequal opportunities and resources passed down from one generation to another limit social mobility and perpetuate poverty.

2. **Environmental degradation:** Failure to address environmental challenges hampers the well-being of future generations and jeopardizes sustainable development.

Addressing both intra-generational and inter-generational equity issues is vital for fostering inclusive growth and sustainable development. Policies that focus on reducing income inequality, promoting equal access to education and technology, tackling intergenerational poverty, protecting the environment, and fostering inclusive governance are crucial steps toward achieving a more equitable and sustainable society.

Answer:

Inclusive growth and sustainable development aim to address equity concerns both within the current generation (intra-generational) and between different generations (inter-generational).

Intra-generational Equity:

1. **Inclusive Growth:** Intra-generational equity focuses on reducing income disparities and providing equal opportunities to all segments of society.

2. **Social Welfare:** It aims to uplift marginalized sections and ensure access to basic services like education, healthcare, and livelihood opportunities.

3. **Poverty Alleviation:** Intra-generational equity strives to alleviate poverty and reduce socio-economic inequalities.

Inter-generational Equity:

1. **Sustainable Development:** Inter-generational equity emphasizes responsible resource management and conservation to ensure that future generations have access to essential resources.

2. **Environmental Protection:** It focuses on mitigating climate change and preserving natural ecosystems to leave a habitable planet for future generations.

3. **Intergenerational Responsibility:** Inter-generational equity requires prudent decisions today to avoid burdening future generations with irreversible environmental damage and resource depletion.

Inclusive growth and sustainable development address both intra-generational and inter-generational equity concerns, ensuring equitable opportunities and access to resources for all while safeguarding the well-being of future generations.

Q2. Define potential GDP and explain its determinants. What are the factors that have been inhibiting India from realizing its potential GDP? (150 words) [10]

Approach to question:

Potential GDP refers to the maximum level of output an economy can produce when all resources are utilized efficiently. Its determinants include:

1. **Labor force:** The size, quality, and productivity of the labor force impact potential GDP.

2. **Capital stock:** The quantity and quality of physical capital, such as infrastructure and machinery, influence production capacity.

3. **Technological progress:** Advancements in technology enhance productivity and drive economic growth.

4. **Human capital:** Education, skills, and health of the workforce contribute to potential GDP.

Factors inhibiting India from realizing its potential GDP are:

1. **Infrastructure gaps:** Inadequate transport, power, and digital infrastructure limit productivity and hinder economic growth.

2. **Skill gaps:** Mismatch between workforce skills and industry requirements affects productivity and reduces the efficiency of labor.

Addressing these inhibiting factors requires sustained efforts to improve infrastructure, enhance skill development, promote formalization, streamline regulations, reduce income inequality, and boost agricultural productivity. By addressing these challenges, India can unlock its true potential GDP and foster sustained and inclusive economic growth.

Answer:

Potential GDP refers to the maximum level of output an economy can sustain without generating inflationary pressures. It represents the economy's full capacity utilization and production efficiency.

Determinants of Potential GDP:

1. **Labor Force:** The size and productivity of the labor force impact potential GDP.

2. **Capital Stock:** The level of physical and human capital influences production capacity.

3. **Technological Advancements:** Innovations and technological progress enhance productivity and potential GDP.

4. **Institutions and Policies:** Sound economic institutions and conducive policies promote long-term growth.

Factors Inhibiting India from Realizing Potential GDP:

1. **Infrastructure Gaps:** Inadequate infrastructure hampers efficient production and distribution, limiting GDP growth.

2. **Labor Market Challenges:** Skill mismatches and low labor force participation impede productivity gains.

3. **Regulatory Burden:** Complex regulations and bureaucratic hurdles stifle business growth and investment.

4. **Income Inequality:** Unequal income distribution constrains consumption and overall demand.

To realize its potential GDP, India must address these inhibiting factors by prioritizing infrastructure development, labor market reforms, improving ease of doing business, promoting inclusive growth, and investing in education and healthcare. Such measures will unlock the economy's full potential and foster sustained and inclusive economic growth.

Q3. **What are the main constraints in transport and marketing of agricultural produce in India?** **(150 words) [10]**

Approach to question:

The main constraints in transport and marketing of agricultural produce in India are:

1. **Inadequate infrastructure:** Insufficient road networks, inadequate storage facilities, and a lack of cold chains and warehouses hinder efficient transportation and storage of agricultural produce.

2. **Fragmented supply chains:** The presence of multiple intermediaries in the supply chain leads to increased costs, delays, and inefficiencies in marketing agricultural produce.

3. **Limited market access:** Farmers often face challenges in accessing wider markets due to the absence of well-functioning market linkages, restrictive trade policies, and limited market information.

Addressing these constraints requires investments in rural infrastructure, such as road connectivity and storage facilities, the development of efficient market linkages, the establishment of farmer-producer organizations, and the adoption of technology-enabled solutions to improve market access and reduce post-harvest losses.

Answer:

Transport and marketing of agricultural produce play a crucial role in ensuring food security and farmers' livelihoods. However, several constraints hinder efficient transportation and marketing in India.

Main Constraints in Transport and Marketing of Agricultural Produce:

1. **Inadequate Infrastructure:** Poor road and rail connectivity limit the smooth movement of agricultural goods from production centers to markets.

2. **Storage and Warehousing:** Insufficient storage facilities lead to post-harvest losses and hinder market access for farmers.

3. **Middlemen and Market Intermediaries:** Exploitative practices of middlemen affect farmers' income and market efficiency.

4. **Price Fluctuations:** Lack of price stabilization mechanisms leads to volatile prices, impacting farmers' income and food security.

5. **Lack of Market Information:** Farmers often lack timely market information, making it challenging to make informed selling decisions.

To overcome these constraints, India needs to invest in rural infrastructure, modernize storage and warehousing facilities, strengthen market linkages, and promote direct farmer-consumer interactions through farmer producer organizations (FPOs) and e-commerce platforms. These measures will enhance transport and marketing efficiency, boost farmers' income, and ensure food availability for consumers.

Q4. **What are the challenges and opportunities of food processing sector in the country? How can income of the farmers be substantially increased by encouraging food processing?**
(150 words) [10]

Approach to question:

The challenges and opportunities of the food processing sector in India are as follows:

Challenges:

1. **Inadequate infrastructure:** Limited cold storage, transportation, and processing facilities hamper the growth of the food processing sector.

2. **Fragmented supply chains:** Lack of coordination and integration among various stakeholders in the supply chain result in inefficiencies and increased costs.

Opportunities:

1. **Rising demand:** Growing population, urbanization, and changing consumer preferences create a vast market for processed food products.

2. **Export potential:** India has a diverse range of agricultural produce, and processed food products can cater to the global market demand.

Increasing farmer income through food processing:

1. **Value chain integration:** Strengthening backward and forward linkages in the food processing sector will provide farmers with direct access to processors and markets, ensuring fair prices and reducing intermediaries' role.

2. **Infrastructure development:** Investing in cold storage, transportation, and processing facilities will reduce post-harvest losses and enhance the value of agricultural produce.

By addressing the challenges and capitalizing on the opportunities, the food processing sector can play a significant role in increasing farmers' income. Promoting value addition, improving infrastructure, providing necessary training, and facilitating financial support will encourage farmers to engage in food processing, thus realizing higher returns on their agricultural produce.

Answer:

The food processing sector in India presents both challenges and opportunities, with the potential to significantly increase farmers' income.

Challenges and Opportunities of Food Processing Sector:

1. **Challenges:** Lack of modern infrastructure, high post-harvest losses, and limited value addition hinder the sector's growth.

2. **Opportunities:** Rising consumer demand for processed and convenience foods, export potential, and government incentives create growth opportunities.

Increasing Farmers' Income through Food Processing:

1. **Value Addition:** Food processing adds value to raw produce, enabling farmers to earn higher returns on their crops.

2. **Reduced Wastage:** Efficient processing and preservation techniques minimize post-harvest losses, ensuring better prices for farmers' produce.

3. **Market Access:** Processed food products open new domestic and international markets, expanding opportunities for farmers.

4. **Agri-Entrepreneurship:** Encouraging farmers to become agri-entrepreneurs by processing their produce empowers them with increased income.

Promoting the food processing sector with proper infrastructure, technology, and policy support can create a win-win situation for farmers and consumers. By tapping into the potential of this sector, farmers' income can be substantially increased, contributing to rural prosperity and overall economic growth.

Q5. **What do you understand by nanotechnology and how is it helping in health sector?**
(150 words) [10]

Approach to question:

Nanotechnology refers to the manipulation and control of materials and devices at the nanoscale level (1-100 nanometers). It involves the study and application of structures, properties, and phenomena at the nanoscale to create new materials and devices with unique properties and functionalities.

In the health sector, nanotechnology has several applications that are revolutionizing healthcare:

1. **Drug delivery systems:** Nanotechnology enables targeted and controlled drug delivery to specific cells or tissues, increasing treatment efficacy and reducing side effects.

2. **Diagnostic tools:** Nanosensors and nanoparticles are used in diagnostic tests for early detection of diseases, including cancer and infectious diseases, improving accuracy and speed of diagnosis.

3. **Imaging techniques:** Nanoparticles are utilized in advanced imaging techniques such as nanoscale imaging and molecular imaging, providing high-resolution images for precise diagnosis and monitoring of diseases.

4. **Regenerative medicine:** Nanomaterials and nanofabrication techniques are used to develop artificial tissues and organs, facilitating tissue engineering and regenerative medicine.

Overall, nanotechnology in the health sector has the potential to revolutionize disease diagnosis, treatment, and patient care. It enables precise drug delivery, early disease detection, high-resolution imaging, regenerative medicine advancements, and improved monitoring of health conditions, ultimately leading to better healthcare outcomes.

Answer:

Nanotechnology involves manipulating materials at the nanoscale to create new properties and applications. It has revolutionized various sectors, including healthcare.

Nanotechnology in the Health Sector:

1. **Drug Delivery:** Nano sized drug carriers can deliver medications precisely to targeted cells, increasing drug efficacy and reducing side effects.

2. **Imaging:** Nanoparticles aid in high-resolution imaging, enabling early detection of diseases and personalized treatments.

3. **Diagnostics:** Nanosensors and nanodevices enhance disease detection accuracy and speed, enabling rapid and sensitive diagnostics.

4. **Regenerative Medicine:** Nanomaterials facilitate tissue regeneration and wound healing through controlled delivery of growth factors and biomolecules.

5. **Cancer Treatment:** Nanoparticles are used in targeted therapies, such as photothermal therapy and drug-loaded nanoparticles, for effective cancer treatment.

Nanotechnology's applications in the health sector have transformed diagnosis, treatment, and patient outcomes. The precision and efficiency it offers hold immense promise for addressing various healthcare challenges and improving overall health services.

Q6. **How is science interwoven deeply with our lives? What are the striking changes in agriculture triggered off by the science-based technologies?** **(150 words) [10]**

Approach to question:

Science is deeply interwoven with our lives in several ways:

1. **Technological advancements:** Science has led to numerous technological innovations that have transformed various aspects of our lives, including communication, transportation, healthcare, and entertainment.

2. **Improved healthcare:** Scientific advancements have contributed to the development of life-saving medicines, medical treatments, and diagnostic tools, improving the quality and length of human life.

In agriculture, science-based technologies have brought about striking changes:

1. **Increased productivity:** Science has enabled the development of high-yielding crop varieties through plant breeding and genetic engineering. These varieties exhibit improved resistance to pests, diseases, and environmental stresses, leading to higher agricultural productivity.

2. **Precision farming:** Science-based technologies like remote sensing, geographic information systems (GIS), and satellite imagery enable precision farming practices. Farmers can monitor soil conditions, water usage, and crop health, leading to optimized resource allocation and increased efficiency.

These science-based changes in agriculture have increased crop yields, improved food security, reduced post-harvest losses, and enhanced farmers' income. However, challenges such as access to technology, affordability, and the need for sustainable and equitable implementation remain important considerations for further progress in the agricultural sector.

Answer:

Science is intricately woven into our lives, influencing and transforming various aspects of human existence.

Science in our Lives:

1. **Communication:** Science enables modern communication technologies like smartphones and the internet, connecting people globally.

2. **Healthcare:** Medical advancements driven by science improve healthcare, extending lifespans and treating diseases effectively.

3. **Transportation:** Science has revolutionized transportation, making travel faster, safer, and more convenient.

4. **Energy:** Science-based technologies provide sustainable and renewable energy sources, powering modern societies.

5. **Information:** Science facilitates access to vast information and knowledge through digital platforms.

Striking Changes in Agriculture due to Science-based Technologies:

1. **High-Yielding Varieties:** Science-led crop breeding introduced high-yielding varieties, increasing agricultural productivity.

2. **Precision Farming:** Technology-driven precision agriculture optimizes resource use, enhancing efficiency and sustainability.

3. **Biotechnology:** Genetic engineering has led to genetically modified crops with improved traits and resistance to pests and diseases.

4. **Farm Mechanization:** Mechanized farming with modern equipment reduces manual labor and increases agricultural output.

Science's profound impact on our lives is evident in various sectors, particularly agriculture. Advancements in science-based technologies have revolutionized farming, empowering farmers with innovative solutions for sustainable and productive agriculture.

Q7. How does the draft Environment Impact Assessment (EIA) Notification, 2020, differ from the existing EIA Notification, 2006?

(150 words) [10]

Approach to question:

The draft Environment Impact Assessment (EIA) Notification, 2020, differs from the existing EIA Notification, 2006, in several ways:

1. **Post facto clearance:** The 2020 draft allows for post facto clearance, which means that projects that have already commenced without obtaining prior environmental clearance can seek clearance after the fact. This provision has been a point of contention as it raises concerns about legalizing projects that may have violated environmental regulations.

2. **Streamlining of the appraisal process:** The draft EIA Notification, 2020, introduces certain changes to streamline the appraisal process. It reduces the number of appraisal committees and allows for the automatic grant of environmental clearance for certain projects based on predefined criteria.

3. **Public participation:** The 2020 draft narrows the scope of public consultation for certain categories of projects, reducing the opportunities for public involvement and scrutiny.

It is important to note that the draft EIA Notification, 2020, has been subject to criticism and debate, with concerns raised about its potential to weaken environmental safeguards and dilute public participation. The final outcome and implementation of the notification will depend on further deliberations, stakeholder consultations, and modifications made by the government.

Answer:

The draft Environment Impact Assessment (EIA) Notification, 2020, is a proposed update to the existing EIA Notification, 2006, aiming to strengthen environmental protection measures and streamline approval processes for developmental projects.

Differences between Draft EIA Notification, 2020, and Existing EIA Notification, 2006:

1. **Post-Facto Clearance:** The draft EIA Notification, 2020, introduces a provision for post-facto clearance, allowing certain projects to seek approval after commencing operations, which was not present in the 2006 notification.

2. **Project Categorization:** The draft notification revises the categorization of projects, altering the level of scrutiny required based on their potential environmental impact.

3. **Timeframes:** The draft notification proposes shorter timelines for public consultations and clearance processes to expedite approvals.

4. **Exemptions:** The draft notification includes more exemptions for specific projects from public consultations, raising concerns about transparency and public participation.

The draft EIA Notification, 2020, brings notable changes to the environmental clearance process, aiming to balance development and environmental protection. However, it has been a subject of debate due to concerns about potential dilution of environmental safeguards and reduced public participation.

Q8. What are the salient features of the Jal Shakti Abhiyan launched by the Government of India for water conservation and water security? (150 words) [10]

Approach to question:

The Jal Shakti Abhiyan, launched by the Government of India, focuses on water conservation and water security. Its salient features include:

1. **Water conservation and storage:** The campaign emphasizes rainwater harvesting, promoting the construction and renovation of traditional water bodies, and creating structures for water storage.

2. **Irrigation efficiency:** The Abhiyan aims to improve irrigation practices by promoting efficient water use through the adoption of micro-irrigation techniques such as drip and sprinkler irrigation.

3. **Sustainable groundwater management:** The campaign emphasizes the sustainable management of groundwater resources, including recharge of aquifers, regulation of extraction, and monitoring of groundwater levels.

These salient features of the Jal Shakti Abhiyan reflect the government's commitment to address water scarcity, promote sustainable water use, and enhance water security across the country.

Answer:

The Jal Shakti Abhiyan is a flagship initiative launched by the Government of India to address water conservation and water security challenges in the country.

Salient Features of Jal Shakti Abhiyan:

1. **Water Conservation:** The campaign focuses on promoting water conservation and rainwater harvesting to recharge groundwater and improve water availability.

2. **Watershed Development:** It emphasizes watershed development and afforestation to enhance water retention and replenishment.

3. **Water Use Efficiency:** The initiative promotes efficient water use in agriculture, industries, and domestic sectors to reduce wastage.

4. **Renovation of Water Bodies:** The Abhiyan aims to rejuvenate traditional water bodies like ponds and lakes for better water storage and utilization.

5. **Behavioral Change:** It seeks to create awareness and foster behavioral change among people towards responsible water usage and conservation.

The Jal Shakti Abhiyan plays a pivotal role in promoting water conservation and ensuring water security for sustainable development. Its multi-pronged approach addresses various aspects of water management, aiming to achieve water sufficiency and resilience in the face of increasing water stress in India.

Q9. Discuss different types of cybercrimes and measures required to be taken to fight the menace.   (150 words) [10]

Approach to question:

Different types of cybercrimes include:

1. **Hacking:** Unauthorized access to computer systems or networks.

2. **Identity theft:** Stealing personal information to impersonate someone.

3. **Phishing:** Trickery to obtain sensitive information like passwords.

4. **Malware attacks:** Infecting systems with malicious software.

Measures to fight cybercrimes include:

1. Strong cybersecurity policies and legislation.

2. Enhanced cooperation among law enforcement agencies.

3. Public awareness campaigns to educate individuals about online risks.

4. Regular software updates and security patches.

5. Robust data protection measures, including encryption.

Answer:

Cybercrimes are criminal activities conducted through digital means, posing significant threats to individuals, organizations, and nations.

Types of Cybercrimes:

1. **Cyber Fraud:** Deceptive online schemes to steal personal or financial information for illicit gains.

2. **Hacking:** Unauthorized access to computer systems to disrupt operations or steal sensitive data.

3. **Phishing:** Impersonating legitimate entities to deceive users into revealing confidential information.

4. **Cyber Bullying:** Harassment and intimidation using digital platforms, causing emotional distress.

5. **Identity Theft:** Stealing personal information to assume someone's identity for illegal purposes.

Measures to Fight Cybercrimes:

1. **Strong Cyber Laws:** Enactment and enforcement of robust cyber laws to deter criminals and protect victims.

2. **Cybersecurity Awareness:** Public awareness campaigns to educate users about safe online practices.

3. **Technological Solutions:** Implementing advanced cybersecurity measures to detect and prevent cyber threats.

4. **International Cooperation:** Collaborating with other nations to combat transnational cybercrimes effectively.

5. **Capacity Building:** Enhancing law enforcement and cybersecurity agencies' capabilities to investigate and respond to cybercrimes.

Fighting cybercrimes requires a multi-faceted approach, including legal, technological, and awareness-building measures to safeguard individuals and society from the growing menace of cyber threats.

Q10. For effective border area management, discuss the steps required to be taken to deny local support to militants and also suggest ways to manage favourable perception among locals.   (150 words) [10]

Approach to question:

Steps to deny local support to militants:

1. **Strengthening security presence:** Deploying adequate security forces and improving border surveillance to deter militants and disrupt their activities.

2. **Intelligence gathering:** Enhancing intelligence networks to identify and neutralize militant networks, thus preventing them from gaining local support.

Ways to manage favorable perception among locals:

1. **Development initiatives:** Implementing socio-economic development projects in border areas to address grievances, reduce alienation, and improve living conditions.

2. **Infrastructure development:** Investing in infrastructure projects such as roads, schools, hospitals, and connectivity to enhance the quality of life and create economic opportunities.

By implementing these steps, effective border area management can be achieved by denying local support to militants and building a favorable perception among the local population. This will contribute to improved security, stability, and development in the border regions.

Answer:

Effective border area management involves addressing local support for militants and managing a favorable

perception among locals to ensure security and stability in border regions.

Denying Local Support to Militants:

1. **Strengthen Intelligence:** Enhance intelligence gathering to identify and neutralize militant sympathizers.

2. **Community Engagement:** Foster trust through community policing and dialogue to prevent local support for militants.

3. **Development Initiatives:** Implement socio-economic projects to address grievances and uplift local communities.

4. **Rehabilitation and Reintegration:** Offer rehabilitation and reintegration programs for former militants to discourage new recruitments.

Managing Favorable Perception:

1. **Information Dissemination:** Use local media and community leaders to disseminate accurate information about government initiatives and counter-militancy efforts.

2. **Grievance Redressal:** Address local grievances promptly and transparently to gain trust and support.

3. **Cultural Sensitivity:** Respect local culture and traditions to build positive relationships with locals.

Effective border area management requires a comprehensive approach that denies local support to militants through intelligence and community engagement, while managing a favorable perception among locals through development initiatives, information dissemination, and cultural sensitivity. These measures will foster security and stability in border regions and promote a sense of trust and cooperation between the government and local communities.

Q11. Explain the meaning of investment in an economy in terms of capital formation. Discuss the factors to be considered while designing a concession agreement between a public entity and a private entity.

(250 words) [15]

Approach to question:

Meaning of investment in an economy in terms of capital formation:

1. **Capital formation:** Investment refers to the process of capital formation in an economy. It involves channeling funds towards the creation and expansion of physical assets, such as infrastructure, factories, machinery, and equipment, which are crucial for economic growth and development.

2. **Savings and investment:** Investment is fueled by savings, as individuals, businesses, and governments save a portion of their income and allocate it towards productive activities.

Factors to consider while designing a concession agreement between a public entity and a private entity:

1. **Clear objectives and scope:** The agreement should clearly define the objectives, scope, and purpose of the project to ensure both parties have a common understanding of the goals to be achieved.

2. **Risk allocation:** The agreement should address the allocation of risks between the public and private entities involved. It should outline the responsibilities, liabilities, and mitigation strategies for various risks associated with the project.

By considering these factors, a well-designed concession agreement can facilitate successful collaboration between public and private entities, promoting investment, economic growth, and efficient service delivery in various sectors.

Answer:

Investment in an economy refers to the process of capital formation, where resources are channeled into producing goods and services that contribute to economic growth and development.

Investment and Capital Formation:

1. **Capital Accumulation:** Investment leads to the creation and accumulation of physical and human capital, which enhances productive capacity.

2. **Technological Advancement:** Investment in research and development fosters technological innovation, driving economic progress.

3. **Infrastructural Development:** Investments in infrastructure improve connectivity, efficiency, and productivity in an economy.

4. **Human Capital:** Investment in education and skill development enhances human capital, making the workforce more productive and competitive.

Factors in Designing Concession Agreement:

1. **Clarity of Terms:** Clear and unambiguous terms outlining rights, responsibilities, and performance standards of both parties.

2. **Risk Allocation:** Fairly allocate risks between the public and private entities to ensure project viability.

3. **Regulatory Framework:** Comply with relevant laws and regulations to ensure transparency and accountability.

4. **Performance Indicators:** Set measurable performance indicators to assess the private entity's efficiency and service delivery.

5. **Dispute Resolution Mechanism:** Establish a robust dispute resolution mechanism to address conflicts promptly.

Investment through capital formation drives economic growth, and well-designed concession agreements between public and private entities play a crucial role

in implementing infrastructure projects efficiently, promoting public welfare, and fostering economic development. Clear and fair concession agreements create an enabling environment for private investments, contributing to overall economic progress.

Q12. **Explain the rationale behind the Goods and Services Tax (Compensation to States) Act of 2017. How has COVID-19 impacted the GST compensation fund and created new federal tensions?** (250 words) 15

Approach to question:

Rationale behind the Goods and Services Tax (Compensation to States) Act of 2017:

1. **GST implementation:** The Act was introduced to compensate states for any revenue losses they might incur due to the implementation of the Goods and Services Tax (GST) system in India.

2. **Transition to GST:** The Act aimed to ensure a smooth transition for states from the previous tax regime to the GST regime by providing them with adequate financial support.

Impact of COVID-19 on the GST compensation fund and federal tensions:

1. **Revenue shortfall:** The economic disruption caused by the COVID-19 pandemic led to a significant decline in tax collections, including GST. This resulted in a substantial reduction in the GST compensation fund, affecting the ability to provide full compensation to the states as per the Act.

2. **Financial stress on states:** The revenue shortfall due to the pandemic increased the financial burden on states, making it challenging for them to meet their expenditure commitments, including providing essential services and undertaking development projects.

The COVID-19 pandemic severely impacted the GST compensation fund and strained the federal relations between the center and the states. The need for balancing revenue expectations, ensuring financial stability, and finding mutually agreeable solutions became crucial in managing the situation and maintaining cooperative fiscal governance.

Answer:

The Goods and Services Tax (Compensation to States) Act of 2017 was enacted to provide compensation to states for any revenue loss arising due to the implementation of the Goods and Services Tax (GST) regime. It aimed to ensure that states did not face financial hardships during the transition to the new tax system.

Rationale behind the Act:

1. **Revenue Loss:** The GST implementation involved merging multiple taxes, which could lead to temporary revenue shortfalls for some states.

2. **Fiscal Stability:** The Act aimed to provide financial stability to states during the transition period,

allowing them to continue delivering essential services without disruption.

Impact of COVID-19 on GST Compensation Fund:

1. **Economic Slowdown:** The pandemic-induced economic slowdown reduced GST collections, affecting the compensation fund.

2. **Revenue Shortfall:** COVID-19 impacted economic activities, leading to a decline in GST collections, resulting in states not receiving the promised compensation.

3. **Federal Tensions:** The revenue shortfall has created tensions between the central and state governments, with states demanding timely compensation and exploring other revenue-raising options.

The GST Compensation to States Act was introduced to ensure a smooth transition to the GST regime and provide financial stability to states. However, the COVID-19 pandemic has severely impacted GST collections, leading to challenges in fulfilling the compensation promises, leading to new federal tensions between the center and states. Addressing these issues and finding a collaborative approach is essential to maintaining fiscal stability and cooperative federalism in the country.

Q13. **What are the major factors responsible for making rice-wheat system a success? In spite of this success how has this system become bane in India?** (250 words) [15]

Approach to question:

Factors responsible for making the rice-wheat system a success:

1. **Complementary crops:** Rice and wheat are complementary crops that require different growing seasons. The rice-wheat system allows for the efficient use of land and resources by utilizing the monsoon for rice cultivation and the dry winter season for wheat cultivation.

2. **Yield stability:** The rice-wheat system has shown consistent and stable yields over the years. This is due to the availability of irrigation facilities for both crops, improved seed varieties, and better agronomic practices.

Challenges and negative impacts of the rice-wheat system in India:

1. **Depletion of groundwater:** The rice-wheat system requires heavy irrigation, leading to excessive groundwater extraction. This has led to a decline in groundwater levels in many regions, resulting in long-term water scarcity and increased energy costs for pumping.

2. **Soil degradation:** Continuous cultivation of rice and wheat without proper crop rotation or soil management practices has led to soil degradation. Nutrient imbalances, loss of soil organic matter, and increased vulnerability to pests and diseases have been observed in many areas.

Efforts are being made to address these challenges through the promotion of sustainable agricultural practices, crop diversification, water conservation, and residue management techniques. Encouraging farmers to adopt conservation agriculture practices, promoting alternative crops, and providing incentives for sustainable farming practices can help mitigate the negative impacts of the rice-wheat system and ensure its long-term sustainability.

Answer:

The rice-wheat system is a prominent cropping pattern in India, covering significant areas. It involves the cultivation of rice during the kharif season and wheat during the rabi season. This system's success can be attributed to various factors, but it also presents some challenges.

Major Factors Responsible for Success:

1. **Complementary Crop Calendar:** Rice and wheat have distinct growing seasons, allowing efficient use of resources and maximizing yield potential.

2. **Water Management:** Rice's water-intensive nature is followed by wheat, which requires less water, optimizing water resources.

3. **Market Demand:** Both rice and wheat are staple food crops with high demand, ensuring assured market and income for farmers.

4. **Government Support:** Policy interventions, research, and extension services have encouraged farmers to adopt and sustain this system.

Challenges and Bane:

1. **Soil Health Decline:** Continuous cultivation of rice-wheat leads to nutrient depletion and soil health deterioration.

2. **Environmental Impact:** Excessive water usage in rice cultivation and stubble burning in wheat leads to environmental degradation and air pollution.

3. **Monoculture Risks:** The over-reliance on rice-wheat makes crops vulnerable to pests, diseases, and climate change impacts.

4. **Water Stress:** Prolonged rice cultivation contributes to water scarcity, affecting water tables and ecological balance.

The rice-wheat system's success in India is attributed to various factors, but its drawbacks, such as soil health decline, environmental impact, and water stress, highlight the need for sustainable agricultural practices and diversification to maintain food security and ecological balance.

Q14. Suggest measures to improve water storage and irrigation system to make its judicious use under depleting scenario.

(250 words) [15]

Approach to question:

Measures to improve water storage and irrigation systems for judicious use under a depleting scenario:

1. **Rainwater harvesting:** Promote the adoption of rainwater harvesting techniques, such as rooftop water collection, check dams, and farm ponds, to capture and store rainwater for agricultural use.

2. **Modernize irrigation infrastructure:** Upgrade irrigation systems by replacing inefficient open channels with piped or pressurized systems like drip irrigation and sprinklers, reducing water losses and improving water use efficiency.

3. **Enhance water storage capacity:** Construct small and large-scale reservoirs, dams, and barrages to increase water storage capacity, ensuring availability during periods of low rainfall and facilitating regulated irrigation.

4. **Water-efficient farming techniques:** Encourage farmers to adopt water-efficient practices like precision irrigation, crop rotation, and mulching to optimize water use, reduce evaporation, and improve overall irrigation efficiency.

By implementing these measures, it is possible to improve water storage and irrigation systems, leading to the judicious use of water resources even under depleting conditions. These actions can contribute to sustainable agriculture, enhance water security, and mitigate the impacts of water scarcity on farming communities.

Answer:

Water scarcity is a growing concern globally, and judicious use of water resources is essential for sustainable development. Improving water storage and irrigation systems can play a crucial role in efficiently utilizing water in a depleting scenario.

Measures to Improve Water Storage and Irrigation System:

1. **Rainwater Harvesting:** Promote rainwater harvesting structures like rooftop harvesting and check dams to store rainwater for future use.

2. **Modern Irrigation Techniques:** Adopt drip irrigation and sprinkler systems to reduce water wastage and increase irrigation efficiency.

3. **Water Reuse:** Implement treated wastewater reuse for non-potable purposes to conserve freshwater resources.

4. **Watershed Management:** Focus on watershed development and soil conservation measures to enhance natural water storage.

5. **Groundwater Recharge:** Encourage artificial recharge of groundwater through percolation ponds and recharge wells.

6. **Water Pricing and Regulations:** Implement appropriate pricing mechanisms and regulations to incentivize water conservation.

7. **Community Participation:** Involve local communities in water management and planning to ensure sustainable water use practices.

8. **Data and Technology:** Utilize advanced data collection and analysis technologies to optimize water allocation and use.

By implementing these measures, water storage and irrigation systems can be improved, ensuring judicious use of water resources even in depleting scenarios. Sustainable water management practices are crucial for addressing water scarcity challenges and ensuring a secure water future for all.

Q15. COVID-19 pandemic has caused unprecedented devastation worldwide. However, technological advancements are being availed readily to win over the crisis. Give an account of how technology was sought to aid management of the pandemic. **(250 words) [15]**

Approach to question:

Technology has played a crucial role in aiding the management of the COVID-19 pandemic. Here is an account of how technology has been utilized:

1. **Remote work and communication:** Technology enabled remote work and virtual communication, allowing businesses and organizations to continue operations while ensuring social distancing measures.

2. **Telemedicine and remote healthcare:** Telemedicine platforms and digital health solutions have facilitated remote consultations, monitoring of patients, and delivery of healthcare services, reducing the burden on healthcare systems and minimizing exposure risks.

3. **Contact tracing and monitoring:** Mobile applications and digital tools were developed for contact tracing, monitoring symptoms, and tracking the spread of the virus, enabling authorities to identify and isolate potential cases more efficiently.

These technological advancements have played a vital role in responding to the COVID-19 crisis, facilitating effective management, and mitigating the impact of the pandemic.

Answer:

The COVID-19 pandemic has been an unprecedented global crisis, impacting public health, economies, and societies worldwide. However, technological advancements have played a crucial role in aiding the management of the pandemic, offering innovative solutions to tackle the challenges posed by the virus.

Technological Advancements in Pandemic Management:

1. **Telemedicine and Remote Monitoring:** Telemedicine platforms allowed healthcare professionals to provide virtual consultations, monitor patients remotely, and reduce the burden on healthcare facilities. Remote patient monitoring devices helped track vital signs and symptoms of patients in home quarantine.

2. **Contact Tracing Apps:** Mobile applications facilitated contact tracing and identification of potential virus carriers, aiding in containment efforts. These apps used Bluetooth and location data to track interactions with infected individuals.

3. **AI and Data Analytics:** Artificial Intelligence and data analytics were used to predict infection hotspots, analyze virus patterns, and optimize resource allocation. AI-driven algorithms helped in drug repurposing and vaccine development.

4. **Vaccine Development:** Advanced technologies like mRNA platforms expedited vaccine development and production, leading to the rapid rollout of vaccines globally. Genetic sequencing and bioinformatics played a vital role in understanding the virus's genetic structure.

5. **Online Communication and Remote Work:** Technology enabled remote work, online education, and virtual meetings, maintaining social distancing protocols. Video conferencing platforms became essential tools for collaboration and communication.

The COVID-19 pandemic showcased the transformative power of technology in managing public health emergencies. From telemedicine to vaccine development and remote collaboration, technology has proven to be a vital tool in combating the crisis and will continue to play a crucial role in shaping future pandemic preparedness and response strategies. Embracing technological innovations is key to building resilient and adaptable healthcare systems for the challenges ahead.

Q16. Describe the benefits of deriving electric energy from sunlight in contrast to the conventional energy generation. What are the initiatives offered by our Government for this purpose? **(250 words) [15]**

Approach to question:

Benefits of deriving electric energy from sunlight in contrast to conventional energy generation:

1. **Renewable and Sustainable:** Solar energy is abundant and inexhaustible, unlike fossil fuels. It helps reduce dependence on depleting resources and ensures a sustainable energy future.

2. **Environmentally Friendly:** Solar power generation produces no greenhouse gas emissions or air pollutants, mitigating the harmful effects of climate change and improving air quality.

Initiatives offered by the Government for solar energy promotion:

1. **National Solar Mission:** The government launched the Jawaharlal Nehru National Solar Mission (JNNSM) to promote the development of solar power generation capacity in the country.

2. **Financial Incentives:** Various financial incentives, such as subsidies, tax benefits, and low-interest loans, are provided to individuals, industries, and farmers to encourage solar power adoption.

Answer:

Electric energy derived from sunlight, also known as solar energy, offers several advantages over conventional energy generation methods. As the world moves towards sustainable and clean energy sources, solar power has gained prominence due to its numerous benefits.

Benefits of Solar Energy:

1. **Renewable and Abundant:** Solar energy is a renewable resource, as sunlight is available in abundance globally, making it an inexhaustible source of power.

2. **Environmentally Friendly:** Solar energy generation produces minimal greenhouse gas emissions, reducing the carbon footprint and combating climate change.

3. **Low Operating Costs:** Once installed, solar panels have low operating costs, as they require minimal maintenance and no fuel expenses.

4. **Distributed Generation:** Solar power allows for distributed generation, enabling electricity production closer to the point of consumption, reducing transmission losses.

5. **Off-Grid Solutions:** Solar energy can be harnessed in remote areas, providing electricity where grid connectivity is challenging or expensive.

Government Initiatives for Solar Energy Promotion:

1. **National Solar Mission:** The Government launched the National Solar Mission to promote solar energy deployment and achieve solar capacity targets.

2. **Solar Subsidies:** Various subsidy schemes are offered to incentivize solar panel installation, making it affordable for consumers.

3. **Solar Rooftop Program:** The Government encourages solar rooftop installations to promote self-consumption and feed excess power into the grid.

4. **Solar Parks:** Large-scale solar parks are developed to attract investments and boost solar capacity.

Solar energy offers significant advantages over conventional energy sources in terms of sustainability, affordability, and environmental impact. The Government of India has implemented several initiatives to promote solar energy adoption, contributing to the country's transition towards cleaner and greener energy systems.

Q17. **What are the key features of the National Clean Air Programme (NCAP) initiated by the Government of India?** (250 words) [15]

Approach to question:

Key features of the National Clean Air Programme (NCAP) initiated by the Government of India:

1. **Comprehensive Approach:** NCAP aims to tackle air pollution comprehensively by addressing sources of pollution, strengthening monitoring networks, and implementing mitigation measures.

2. **City-specific Action Plans:** The program focuses on 122 non-attainment cities, identified based on their ambient air quality. It establishes city-specific action plans to reduce pollution levels and improve air quality.

3. **Sectoral Interventions:** NCAP emphasizes sectoral interventions in key areas such as industry, transport, and waste management to control emissions and promote clean technologies.

In summary, the National Clean Air Programme (NCAP) focuses on a comprehensive and systematic approach to combat air pollution. It encompasses city-specific action plans, sectoral interventions, technology adoption, public participation, monitoring systems, and inter-agency coordination to improve air quality in India's identified non-attainment cities.

Answer:

The National Clean Air Programme (NCAP) is a flagship initiative of the Government of India launched in January 2019 to combat air pollution and improve air quality in the country. It aims to tackle the rising levels of pollution, particularly in urban centers, by implementing comprehensive measures and engaging multiple stakeholders.

Key Features of the National Clean Air Programme (NCAP):

1. **City-Specific Action Plans:** NCAP focuses on 122 non-attainment cities (where air quality standards are not met) and aims to develop city-specific action plans to address local pollution sources effectively.

2. **Source Apportionment Studies:** The program emphasizes conducting source apportionment studies to identify major pollution contributors and implement targeted actions.

3. **Multipronged Approach:** NCAP adopts a multipronged approach, including technology interventions, stricter emission norms, promoting public transportation, and encouraging electric mobility.

4. **Monitoring and Data Dissemination:** The program emphasizes strengthening air quality monitoring networks and promoting data dissemination for better public awareness.

5. **Multi-Sectoral Collaboration:** NCAP recognizes the need for collaboration among various

stakeholders, including government agencies, industries, civil society, and citizens, to achieve meaningful results.

The National Clean Air Programme (NCAP) is a crucial step towards improving air quality and combating air pollution in India. By adopting a comprehensive and collaborative approach, the program aims to achieve significant reductions in pollution levels, safeguard public health, and promote sustainable development.

Q18. **Discuss the recent measures initiated in disaster management by the Government of India departing from the earlier reactive approach.** **(250 words) [15]**

Approach to question:

The Government of India has taken significant steps to transform its approach to disaster management from a reactive stance to a proactive and preventive one. Recent measures in this regard include:

1. **National Disaster Management Plan:** The government has formulated a comprehensive National Disaster Management Plan that integrates various ministries and departments, emphasizing a proactive and holistic approach to disaster preparedness, response, and recovery.

2. **Early Warning Systems:** The government has invested in strengthening early warning systems for various hazards like cyclones, floods, and earthquakes. These systems enable timely alerts and evacuation, reducing the loss of life and property.

3. **Capacity Building:** The government has prioritized capacity building at various levels, including training and equipping first responders, community volunteers, and government officials, to enhance their preparedness and response capabilities.

These recent measures demonstrate the government's shift towards a proactive approach in disaster management, emphasizing prevention, preparedness, and resilience-building. By integrating various stakeholders, embracing technology, and prioritizing risk reduction, the government aims to minimize the loss of lives and property during disasters and ensure a swift and effective response to emergencies.

Answer:

The Government of India has made significant strides in recent years to depart from the earlier reactive approach to disaster management and adopt a proactive and preventive approach. The following measures highlight the government's efforts in this direction:

1. **National Disaster Management Plan (NDMP):** The government formulated the NDMP in 2016, which serves as a comprehensive framework for disaster management. It emphasizes a proactive approach by integrating various ministries and

departments and focuses on preparedness, mitigation, and risk reduction.

2. **Early Warning Systems:** The government has invested in strengthening early warning systems for various hazards, such as cyclones, floods, and earthquakes. The Indian Meteorological Department (IMD) has enhanced its forecasting capabilities and communication systems to provide timely alerts to vulnerable communities, enabling timely evacuation and reducing the loss of life.

3. **Capacity Building:** The government has prioritized capacity building at various levels. It conducts training programs and workshops for first responders, community volunteers, and government officials to enhance their preparedness and response capabilities. The National Institute of Disaster Management (NIDM) plays a crucial role in imparting training and conducting research in disaster management.

4. **Risk Assessment and Mapping:** The government recognizes the importance of risk assessment and mapping to identify vulnerable areas and develop location-specific strategies. The National Disaster Management Authority (NDMA) has initiated efforts to assess risks and vulnerabilities through scientific studies, GIS mapping, and remote sensing techniques.

These recent measures by the Government of India reflect a departure from the earlier reactive approach to disaster management. By focusing on preparedness, early warning systems, capacity building, technology integration, and community participation, the government aims to minimize the impact of disasters, enhance resilience, and ensure a swift and effective response during emergencies. Continued efforts in this direction are vital for building a safer and more disaster-resilient nation.

Q19. **What are the determinants of left-wing extremism in Eastern part of India? What strategy should Government of India, civil administration and security forces adopt to counter the threat in the affected areas?**

(250 words) [15]

Approach to question:

Determinants of left-wing extremism in the Eastern part of India include:

1. **Socio-economic Inequality:** Widespread poverty, land disputes, lack of basic amenities, and inequitable distribution of resources contribute to the sense of marginalization and grievances among the local population, which extremist groups exploit.

2. **Governance Deficit:** Weak governance, corruption, and ineffective delivery of public services create a fertile ground for the growth of left-wing extremist ideologies as an alternative to the state.

To counter the left-wing extremism threat, the Government of India, civil administration, and security forces should adopt the following strategies:

1. **Development Initiatives:** Focus on comprehensive development programs targeting the affected regions, including infrastructure development, employment generation, and access to basic services to address socio-economic grievances.

2. **Strengthening Governance:** Enhance governance structures, transparency, and accountability to address corruption and improve service delivery, ensuring that the benefits of development reach the marginalized communities.

By implementing these strategies, the Government of India, civil administration, and security forces can effectively counter the threat of left-wing extremism in the affected areas, ensuring the restoration of peace, security, and development.

Answer:

Left-wing extremism (LWE) has been a persistent challenge in the eastern part of India, particularly in states like Jharkhand, Chhattisgarh, and Odisha. Understanding the determinants of LWE and adopting an effective strategy to counter the threat is crucial for restoring peace and development in the affected regions.

Determinants of Left-Wing Extremism:

1. **Socio-Economic Inequalities:** Marginalization, land disputes, and lack of basic services create fertile grounds for discontent and recruitment of extremist cadres.

2. **Governance Deficits:** Weak governance, corruption, and inadequate law enforcement contribute to the spread of extremism.

3. **Resource Exploitation:** The presence of rich mineral resources attracts extremist groups seeking to exploit these resources and fund their activities.

4. **Ideological Appeal:** LWE groups exploit grievances related to land, forest, and tribal rights, appealing to vulnerable sections.

Counter Strategy:

1. **Development and Welfare:** Focus on inclusive development, infrastructure, and access to basic services to address socio-economic grievances.

2. **Strengthening Governance:** Improve governance, enhance administrative capacities, and foster transparency to address governance deficits.

3. **Intelligence-Based Operations:** Adopt intelligence-based and surgical operations against extremist groups to disrupt their activities.

4. **Community Engagement:** Involve local communities in the development process and foster community policing to build trust and curb radicalization.

Addressing the determinants of left-wing extremism requires a multi-faceted approach, emphasizing development, governance, and security measures. A collaborative effort involving the Government of India, civil administration, and security forces is necessary to effectively counter the threat and bring lasting peace and prosperity to the affected areas.

Q20. **Analyse internal security threats and transborder crimes along Myanmar, Bangladesh and Pakistan borders including Line of Control (LoC). Also discuss the role played by various security forces in this regard.** **(250 words) [15]**

Approach to question:

Internal security threats and transborder crimes along the borders of Myanmar, Bangladesh, and Pakistan, including the Line of Control (LoC), pose significant challenges to India's security. The following points analyze these issues and the role played by various security forces:

1. **Border Infiltration:** The porous borders facilitate the infiltration of terrorists, insurgents, and illegal migrants, posing a threat to internal security.

2. **Smuggling and Trafficking:** Transborder crimes such as arms smuggling, drug trafficking, human trafficking, and counterfeit currency circulation are rampant along these borders.

3. **Insurgent Activities:** Insurgent groups take advantage of the rugged terrains and porous borders to launch attacks, extort money, and spread violence.

4. **Role of Indian Army:** The Indian Army plays a crucial role in border security, conducting counter-insurgency operations, and maintaining peace along the LoC. It works in close coordination with other security forces.

Addressing these internal security threats and transborder crimes requires a multi-pronged approach involving effective border management, intelligence sharing, capacity building of security forces, and cooperation with neighbouring countries. Continuous vigilance, intelligence-based operations, and proactive measures are necessary to mitigate these challenges and maintain internal security along these borders.

Answer:

India faces various internal security threats along its borders with Myanmar, Bangladesh, and Pakistan, including transborder crimes and insurgency activities. The Line of Control (LoC) with Pakistan-administered Kashmir is another sensitive area prone to cross-border infiltration and terrorism.

Internal Security Threats and Transborder Crimes:

1. **Myanmar Border:** The Northeastern states face insurgency, arms smuggling, and drug trafficking from insurgent groups operating across the Myanmar border.

2. **Bangladesh Border:** Illegal immigration, smuggling, and cattle rustling are common challenges along the Bangladesh border.

3. **Pakistan Border and LoC:** Cross-border terrorism, infiltration, and smuggling of arms and drugs pose significant threats.

Role of Security Forces:

1. **Indian Army:** The Indian Army plays a vital role in safeguarding the borders, conducting counter-terrorism operations, and preventing infiltration.

2. **Border Security Force (BSF):** The BSF is responsible for guarding the Bangladesh and Pakistan borders, curbing illegal immigration and transborder crimes.

3. **Assam Rifles:** The Assam Rifles is deployed in the Northeastern region and assists in counter-insurgency operations.

4. **Central Reserve Police Force (CRPF):** The CRPF supports state police in maintaining law and order and counter-insurgency operations.

5. **Indian Coast Guard (ICG):** The ICG ensures maritime security and prevents smuggling and infiltration along coastal areas.

Addressing internal security threats and transborder crimes requires close coordination and cooperation among various security forces. Continuous vigilance and effective border management are essential to safeguard national security and maintain peace and stability in these sensitive regions.