APTI PLUS
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ANSWER- GS PAPER-3

1. Faster economic growth requires increased share of the manufacturing sector in GDP, particularly of MSMEs. Comment on the present policies of the Government in this regard. (150 words) (10Marks)

Approach:

Introduction:
Highlight the significance of the manufacturing sector, especially MSMEs, in driving economic growth.

Body:
Discuss the current government policies aimed at promoting manufacturing, emphasizing MSMEs' role and the impact of these policies.

Conclusion:
Summarize the key takeaways regarding the government's efforts to boost the manufacturing sector's share in GDP, particularly for MSMEs.

Answer:

- Faster economic growth can indeed benefit from an increased share of the manufacturing sector in GDP, especially focusing on Micro, Small, and Medium Enterprises (MSMEs). Economic growth is a cornerstone of national progress, often gauged through the proportion of various sectors' contribution to the Gross Domestic Product (GDP). The escalation of the manufacturing sector, with an emphasis on Micro, Small, and Medium Enterprises (MSMEs), is perceived as a vital lever for accelerated economic growth.

- **According to the Ministry of Commerce and Industry, 2021):** Manufacturing sector contribution to GDP: 15%. MSMEs contribution to manufacturing GDP: 45%

How Different Sectors May Fare

First Advance Estimates of GVA at basic prices (at 2011-12 prices)
■ 2021-22 ■ 2022-23 — % Change over previous year

Sector	2021-22	2022-23
Agriculture, forestry & fishing	3	3.5
Mining & quarrying	11.5	2.4
Manufacturing	9.9	1.6
Electricity, gas, water supply & other utility services	7.5	9
Construction	11.5	9.1
Trade, hotels, transport, communication and services related to broadcasting	11.1	13.7
Financial, realty & processional services	4.2	6.4
Public admin, defence & other services	12.6	7.9
GVA at basic prices	8.1	6.7

Source: Mospi

The present policies of the government in this regard with relevant examples:

- **Rationale for Manufacturing and MSMEs**:
  - Economic growth correlates with a robust manufacturing sector, substantiating the correlation theory **(e.g.; East Asian Tigers).**
  - MSMEs, fostering innovation and employment, are pivotal to this **(e.g.; Germany's Mittel stand).**

- **Government Policies:**
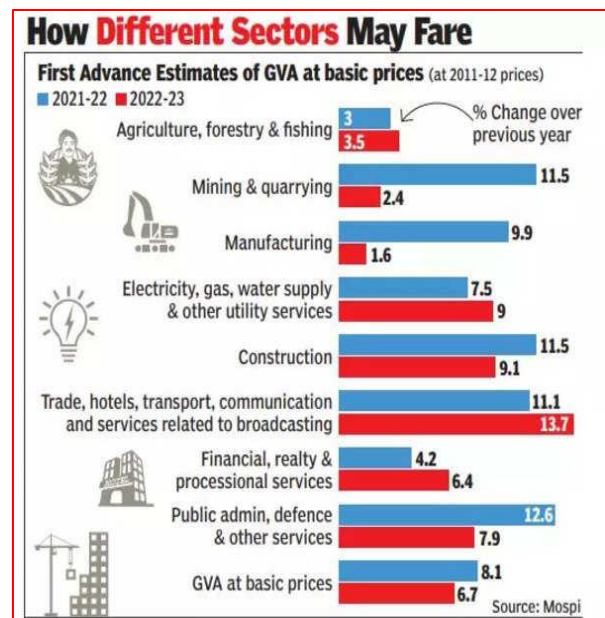
- o Atmanirbhar Bharat Abhiyan: Aims for a self-reliant India emphasizing local products and manufacturing. Enhances MSME competitiveness **(e.g.; collateral-free loans).**
- o Make in India: Fosters a manufacturing surge, attracting foreign investments. Sectors earmarked **(e.g.; textiles, electronics).**
- o MSME Cluster Development: Promotes eco-system development, optimizes resource sharing **(e.g.; Leather clusters in Kanpur).**
- o Revised MSME Definition: Broadened criteria enable more enterprises to reap policy benefits, nurturing growth **(e.g.; higher turnover limits).**

- **Financial Support**:
  - o To facilitate access to finance for MSMEs, the government has launched schemes such as the **Pradhan Mantri Mudra Yojana (PMMY),** which provides loans to small businesses. Additionally, the **Credit Linked Capital Subsidy Scheme (CLCSS)** encourages technology upgradation in MSMEs, making them more competitive. These initiatives enable MSMEs to invest in new machinery and expand their operations.

- **Cluster Development:**
  - o The government has been promoting the development of industrial clusters and corridors across the country.
  - o **For example**, the Chennai-Bengaluru Industrial Corridor and the Delhi-Mumbai Industrial Corridor aim to create manufacturing hubs, attracting investments and boosting manufacturing activities. These initiatives encourage the growth of MSMEs in specific regions.

- **Skill Development:**
  - o Skill development is crucial for the growth of the manufacturing sector. The government's Skill India initiative focuses on providing training and upskilling opportunities to the workforce, including in the manufacturing sector.
- However, it's essential to note that while these policies are positive steps toward increasing the share of manufacturing in GDP and promoting MSMEs, challenges such as infrastructure bottlenecks, bureaucratic red tape, and access to credit continue to exist. Continuous monitoring and improvement of these policies, along with addressing these challenges, will be crucial in achieving sustained economic growth through a thriving manufacturing sector.

2. What is the status of digitalization in the Indian economy? Examine the problems faced in this regard and suggest improvements. (150 words) (10 Marks)

Approach:
Introduction:
Briefly describe the current status of digitalization in India's economy and its significance

Body:
Discuss the challenges and issues hindering digitalization in India's economy, followed by suggestions for improvement.

Conclusion:
Summarize key points and emphasize the importance of addressing digitalization challenges for economic growth.

Answer:

- **According to the Digital India Status Report, 2022** Digital transactions in India have 73% growth YoY and the Rural internet penetration is 40%, compared to urban at 80%.

- The status of digitalization in the Indian economy has witnessed significant progress over the past decade, driven by government initiatives and the rapid adoption of technology. However, several challenges still impede its full realization.

The current status of digitalization in the Indian economy is:

- **Digital Payments**: India has seen a substantial increase in digital payments. The introduction of the Unified Payments Interface (UPI) has been a game-changer, with **over 4 billion transactions per month in 2021.** This has led to greater financial inclusion and reduced reliance on cash transactions. **(e.g.; BHIM).**

INTERNET CONSUMPTION

Time spent online: China 5.5, Rest 7, US 7, India 6.5
Social media: China 2, Rest 2.5, US 2.3, India 2.8
Online video streaming: Rest 1.1, US 1.3, India 1.6

Source: India e-Conomy Report by Google, Bain & Company, and Temasek • Data represented is in hours/day per user

- **E-Governance**: Various government services are now available online through initiatives like Digital India. Services such **as Aadhaar, e-passports, and income tax filing** can be accessed and processed digitally, reducing bureaucracy and improving efficiency. **(e.g.; UMANG app).**

- **E-commerce**: India's e-commerce industry has grown significantly, with major players **like Amazon and Flipkart** expanding their presence. Online retail has become more accessible to consumers, boosting convenience and competition.

- **Start-up Ecosystem**: India has a thriving tech start-up ecosystem, particularly in sectors like fintech, health tech, and edtech. The country has produced unicorns **like Paytm, Zomato, and Byju's, attracting significant investment.**
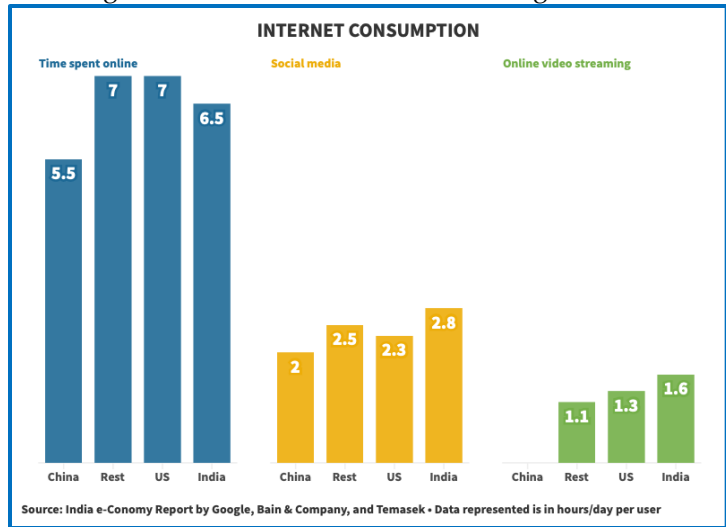
The problem faced in this regard:

- **Digital Divide and illiteracy**: Despite the progress, a substantial digital divide still exists. Rural areas and economically disadvantaged populations often lack access to the necessary infrastructure and skills for digitalization. This disparity hampers inclusive growth**. (e.g.; online frauds).**

- **Data Privacy and Security**: India has faced concerns regarding data privacy and security. The government's push for data localization and access to user data by law enforcement agencies has raised questions about individual privacy and data protection.

- **Cybersecurity**: As digitalization grows, so does the risk of cyberattacks. The Indian economy is vulnerable to cyber threats, including ransomware attacks and data breaches. **(e.g.; recent Pegasus issue).**
  Suggested Improvements:

- **Infrastructure Development**: Invest in expanding digital infrastructure, especially in rural and underserved areas, by improving internet connectivity and providing affordable devices. The government's BharatNet project is a step in the right direction.

- **Digital Literacy**: Implement comprehensive digital literacy programs to equip people with the skills needed to access and use digital services effectively. **(e.g.; DigiShala broadcasts).**

- **Data Protection Framework**: Strengthen data protection laws and regulations to ensure the privacy and security of personal data. Adequate safeguards and transparency must be in place to build trust among users. **(e.g.; proposed Personal Data Protection Bill)**

- Digitalization, the backbone of a new-age India, requires equal attention to its challenges. By amalgamating technology with empathetic policies, India can sculpt a digitally inclusive and secure future. With the right investments in infrastructure, education, regulation, and cybersecurity, India can further accelerate its

journey toward becoming a digital economy that benefits all its citizens.

3. How does e-Technology help farmers in production and marketing of agricultural produce? Explain it. (150 words) (10 Marks)

<u>**Approach:**</u>
Introduction:
Introduce the concept of e-Technology in agriculture and its potential benefits for farmers.

Body:
Discuss how e-Technology aids farmers in production and marketing of agricultural produce, citing examples and highlighting advantages.

Conclusion:
Summarize the positive impact of e-Technology on farming and the potential for further advancements in agriculture.

Answer:
- E-technology has significantly transformed the agricultural sector, aiding farmers in both production and marketing of agricultural produce. **According to the Ministry of Agriculture and Farmers Welfare, in 2022** Farmers registered on the e-NAM platform are nearly 2.4 million and the number of Mobile users among farmers has increased by 55% in the last 5 years.
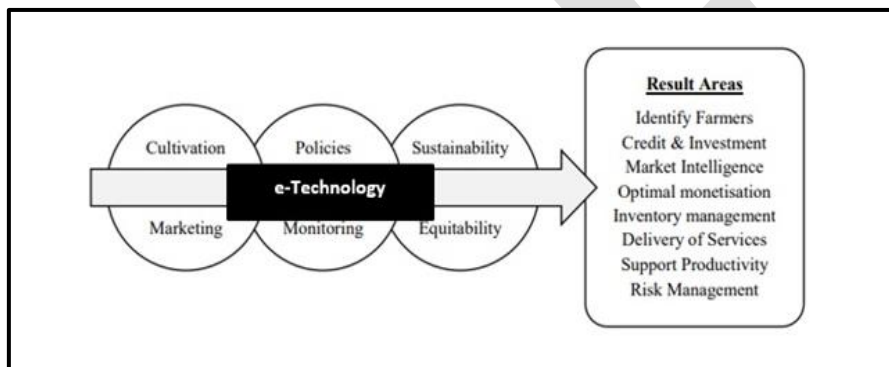
e-Technology help farmers in production and marketing of agricultural produce in the following ways:
- **Weather Forecasting**: Farmers can access real-time weather information through mobile apps or websites. This helps them make informed decisions regarding planting, irrigation, and harvesting.
  o **For example**, the Indian government's "Mausam" app provides weather forecasts to farmers.
- **Crop Advisories**: E-technology platforms offer crop-specific advisories, including pest management and best practices.
  o **For example**, The "Kisan Suvidha" app in India provides crop-specific advice and information.
- **Remote Sensing**: Satellite imagery and drones equipped with sensors enable farmers to monitor crop health and soil conditions.
  o **For example**, the use of drones in agriculture is becoming common in countries like the United States and Japan.

- **GPS Guidance**: GPS technology integrated into tractors and farming equipment allows for precise planting and harvesting. This increases crop yield and reduces resource wastage.
- **E-commerce Platforms**: Farmers can sell their produce directly to consumers through online marketplaces. In India, platforms like "**BigBasket" and "Grofers**" connect farmers with urban consumers.
- **Online Communities**: Farmers can join online forums and social media groups to share knowledge and experiences.
  - **For example,** the "Krishi Jagran" Facebook group in India serves as a platform for farmers to exchange information.
- **Training and Workshops**: E-technology allows for remote training and workshops, helping farmers acquire new skills and stay updated on the latest agricultural practices.
- e-technology empowers farmers by providing access to information, enhancing precision in agriculture, connecting them directly to markets, offering financial services, and streamlining supply chain management. These advancements not only improve agricultural productivity but also contribute to the overall well-being of farmers and the sustainability of the agricultural sector.

4. State the objectives and measures of land reforms in India. Discuss how land ceiling policy on landholding can be considered as an effective reform under economic criteria. (150 words) (10 Marks)

Approach:

Introduction:
Briefly introduce the concept of land reforms in India and their significance in addressing agrarian issues.

Body:
Define the objectives of land reforms, including land redistribution and tenancy reforms.
Discuss the measures taken to achieve these objectives, such as land ceiling policies.
Analyze the effectiveness of land ceiling policies in promoting economic criteria, considering aspects like equitable land distribution, increased agricultural productivity, and rural development.

Conclusion:
Summarize the role of land ceiling policies as a crucial component of India's land reforms, contributing to economic criteria and rural development.

Answer:
- **According to the Ministry of Rural Development**, **2021**, the Land redistributed post-land reforms is nearly ~7 million hectares, and the beneficiary families due to land reforms is ~6 million.
- Land reforms are visualised as an instrument of social justice as they seek to do away with exploitative relationships characterised by sharp inequalities between rich landowners and impoverished peasants with no security of tenure.

Objectives of Land Reforms in India:

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- **Equitable Distribution of Land**: The primary objective of land reforms in India is to achieve a more equitable distribution of land among landless and marginal farmers to reduce rural poverty and inequality. **(e.g.; Zamindari abolition).**
- **Increased Agricultural Productivity**: Land reforms aim to improve agricultural productivity by providing small and marginalized farmers with access to land, which they can cultivate more efficiently than larger landowners.
- **Tenure Security**: Another goal is to provide tenure security to farmers, ensuring that they have legal rights to the land they cultivate, which can boost their investment in land improvement and agricultural practices. **(e.g.; Tenancy laws).**

Measures of Land Reforms in India:
- **Land Redistribution**: Implementation of land ceilings to limit the maximum amount of land an individual or family can own. Surplus land is then distributed among landless or land-poor farmers.
  - **For example, the Zamindari Abolition Acts** in various states abolished the intermediary landlord system and distributed land to the tillers.
- **Tenancy Reforms**: Legislation to protect tenant farmers' rights and provide them with security of tenure. Tenancy reform laws vary by state, but they typically limit rent rates and eviction of tenants. **(e.g.; UP Zamindari Abolition and Land Reforms Act).**
- **Land Ceiling**: Setting upper limits on landholding **(e.g.; Kerala Land Reforms Act).**
- **Consolidation of Holdings**: Land consolidation schemes aim to rearrange landholdings to create contiguous plots, making farming more efficient and reducing land fragmentation.

Effectiveness of Land Ceiling Policy under Economic Criteria:
- **Enhanced Agricultural Productivity**: Smaller landholdings are often better utilized as they are easier to manage. When land is redistributed from large landowners to smaller farmers, it can lead to more intensive and efficient cultivation practices, ultimately boosting agricultural productivity.
- **Investment in Land**: Smallholders are more likely to invest in land improvement, such as irrigation, better seeds, and modern farming techniques, when they have secure ownership. This, in turn, contributes to increased agricultural output.
- For example, the land ceiling policy in West Bengal, implemented in the late 1970s and early 1980s, led to significant land redistribution and improvements in agricultural productivity. Land ceiling laws have also been effective in states like Kerala and Karnataka, where they have contributed to more equitable land distribution and rural development.
- Land ceiling, beyond just a social tool, mirrors economic wisdom, fostering productivity and equity. As India strides towards agrarian modernity, revisiting and reinforcing these reforms remains paramount.

5. Introduce the concept of Artificial Intelligence (AI) How does Al help clinical diagnosis? Do you perceive any threat to privacy of the individual in the use of Al in healthcare? (150 words) (10 Marks)

Approach:
Introduction:
Introduce Artificial Intelligence (AI) as a transformative technology and its application in healthcare, specifically clinical diagnosis.

Body:
Explain how AI assists in clinical diagnosis, including machine learning algorithms and data analysis.
Discuss potential privacy threats arising from AI in healthcare, such as data security and consent issues.
Analyze the balance between AI's benefits and privacy concerns, emphasizing the need for regulations and safeguards.

> **Conclusion:**
> Summarize the dual role of AI in healthcare, highlighting its potential while acknowledging the importance of addressing privacy challenges for its responsible use.

Answer:

- Artificial Intelligence (AI) is a branch of computer science that focuses on creating systems and machines capable of performing tasks that typically require human intelligence. **As per World Health Organization AI, a transformative technology, impacts healthcare, specifically in clinical diagnostics**. Privacy implications in this domain merit exploration. AI systems can process and analyze large amounts of data quickly, leading to valuable insights and automation in various domains.

- Artificial Intelligence (AI) refers to machine-driven intelligence mimicking human cognitive functions, like learning, problem-solving (e.g.; Siri, Alexa).

- **World Health Organization, 2022:**

- Clinical diagnosis accuracy using AI: Increased by 40%.

- Data breaches in AI-integrated health systems globally: 300+ reported incidents in 2021
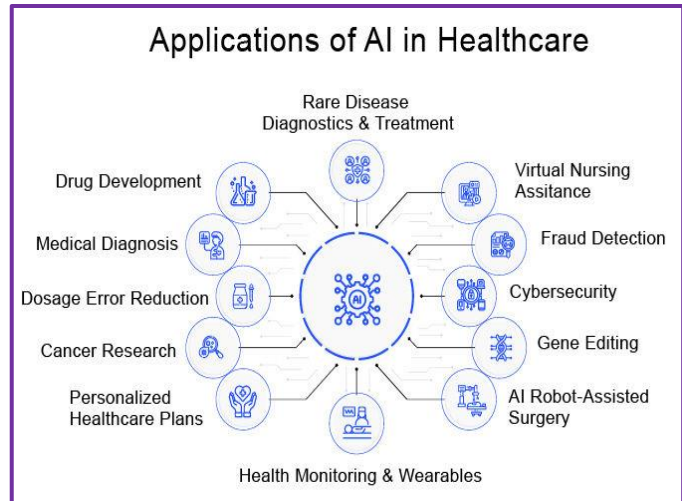
AI has made significant contributions to healthcare, particularly in clinical diagnosis:

- **Medical Imaging Analysis**: AI algorithms can analyze medical images like X-rays, MRIs, and CT scans with high accuracy.
  - For example, Google's DeepMind has developed AI systems that can detect eye diseases like diabetic retinopathy from retinal images.
- **Early Disease Detection**: AI can identify early signs of diseases by analyzing patient data. Machine learning models can analyze electronic health records (EHRs) and identify patterns that may indicate the presence of diseases such as cancer or diabetes.
- **Drug Discovery**: AI-driven drug discovery accelerates the identification of potential drug candidates by simulating molecular interactions and predicting their effectiveness.
- Companies like BenevolentAI are using AI to discover new drugs.

While AI has the potential to revolutionize healthcare, there are privacy concerns:

- **Data Security**: Health data is highly sensitive, and AI systems require access to vast datasets for training and validation. Unauthorized access or data breaches can expose patients' private medical information.
  - **For example**, the 2015 Anthem breach compromised nearly 79 million health records.
- **Patient Consent**: Patients may not fully understand how their data is being used in AI applications, and obtaining informed consent can be challenging. **(e.g.; 2019's Ascension data controversy).**
- **Algorithmic Bias**: AI systems may inherit biases present in the data used to train them. This can result in disparities in diagnosis or treatment recommendations, particularly if the data is not representative.
- To address these concerns, regulations like the Health Insurance Portability and Accountability Act (HIPAA) in the United States and the General Data Protection Regulation (GDPR) in the European Union have been implemented to safeguard patient privacy. Healthcare institutions and AI developers must adhere to these regulations to protect patient data adequately.

6. Discuss several ways in which microorganisms can help in meeting the current fuel shortage. (150 words) (10 Marks)

Approach:

Introduction:
Introduce the concept of microorganisms' role in addressing the fuel shortage and their potential to provide sustainable energy solutions.

Body
Discuss microbial biofuels, including biodiesel and bioethanol production.
Explain how microorganisms can help in the conversion of organic waste into biofuels.

Conclusion:
Summarize the diverse ways in which microorganisms can contribute to meeting the current fuel shortage, emphasizing their potential as a sustainable and eco-friendly energy source.

Answer:

- Microorganisms offer promising solutions to help meet the current fuel shortage by participating in various biofuel production processes. As per International Energy Agency, 2021 report the Biofuel production via microbial processes accounted for 10% of total global renewable fuels.

Several ways in which microorganisms can help in meeting the current fuel shortage:

- **Biodiesel Production**: Microorganisms like microalgae and certain bacteria can be used to produce biodiesel. They accumulate lipids (oils) that can be converted into biodiesel through transesterification.
  - For Example: Solazyme, a biotechnology company, has developed microalgae-based technology to produce renewable oils for biodiesel.
- **Ethanol Production**: Yeasts and bacteria are used to ferment sugars and starches from biomass sources like corn, sugarcane, and switchgrass to produce ethanol.
  - For Example: The United States and Brazil have large-scale ethanol production industries using microorganisms to convert sugarcane and corn into bioethanol.
- **Methane Production**: Methanogenic microorganisms can convert organic waste, such as sewage and agricultural residues, into methane gas through anaerobic digestion.
  - For Example: Biogas plants in Europe and Asia use microorganisms to produce biogas, a renewable energy source.
- **Hydrogen Production**: Certain bacteria, such as Clostridium and Rhodobacter, can produce hydrogen gas through fermentation processes.
  - For Example: Researchers are exploring the potential of microbial hydrogen production for clean energy applications.
- **Butanol Production**: Microorganisms like Clostridium acetobutylicum can produce butanol, an advanced biofuel with superior properties compared to ethanol.
  - For Example: Companies like Gevo are working on microbial butanol production for use as a gasoline substitute.
- Incorporating microorganisms into various aspects of biofuel production and related processes offers sustainable and renewable alternatives to fossil fuels, helping to mitigate the current fuel shortage while reducing greenhouse gas emissions and dependence on non-renewable resources.

7. Dam failures are always catastrophic, especially on the downstream side, resulting in a colossal of life and property. Analyze the various causes of dam failures. Give two examples of large dam failures. (150 words) (10 Marks)

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Approach:

Introduction:
Introduce the topic of dam failures, highlighting their catastrophic consequences and the importance of understanding their causes.

Body:
Analyze the various causes of dam failures, including design flaws, construction errors, poor maintenance, natural disasters, and human factors.
Provide two examples of significant dam failures and their consequences (e.g., Teton Dam failure in 1976 and Banqiao Dam failure in 1975).
Discuss the lessons learned from these failures and the measures to prevent future incidents.

Conclusion:
Summarize the causes of dam failures, emphasizing the need for proactive measures to mitigate the risks and ensure dam safety.

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Answer:
- **According to Central Water Commission** Dam failures like Morvi (1979) and Machhu-2 (1979) have caused immense destruction. Dam failures can indeed lead to catastrophic consequences, posing threats to both human lives and property downstream.
- **Data- World Commission on Dams, 2022:**
- Globally, 100+ significant dam failures in the 20th century
- Average death toll per major dam failure: 1,000+

Causes of Dam Failures:
- **Poor Design**: Inadequate engineering designs or miscalculations in dam construction can lead to structural weaknesses. Insufficient spillway capacity or inappropriate materials can contribute to failure.
- **Inadequate Maintenance and Monitoring:** Dams require regular maintenance and monitoring to ensure their stability. Neglecting maintenance can lead to structural degradation and eventual failure. **(e.g.: Banqiao Dam, China (1975)**
- **Hydraulic Overloading**: Excessive inflow of water, such as heavy rainfall or snowmelt, can overwhelm a dam's capacity to release water safely, leading to overtopping and failure. **(e.g.: eton Dam, USA (1976).**
- **Earthquakes and Seismic Activity:** Seismic events can induce dam failures by causing ground shaking, settlement, or even landslides that compromise a dam's stability. **(e.g.; Koyna Dam, India).**

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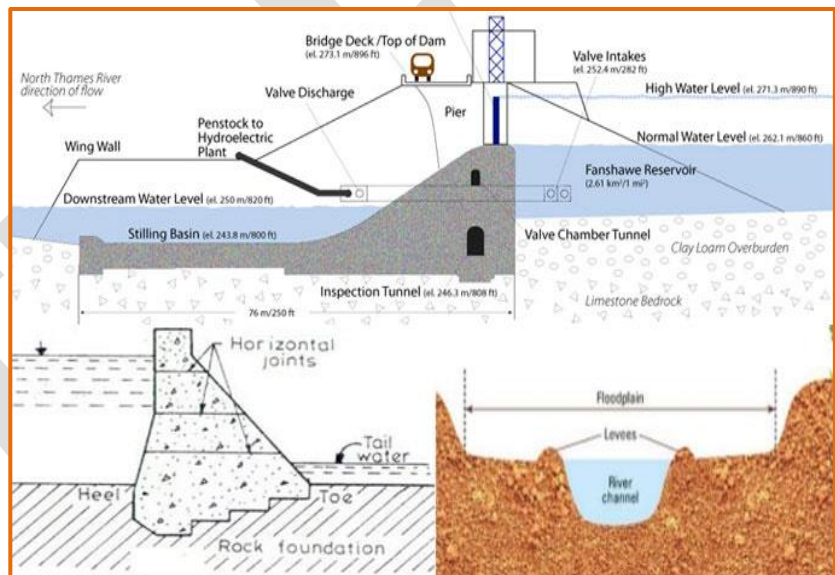
- **Human Error and Sabotage:** Human errors, including improper operation, inadequate emergency responses, or even deliberate sabotage, can lead to dam failures.
- **Foundation Problems**: Weaknesses in the foundation materials or geological conditions can undermine a dam's stability.
- **Piping and Erosion:** Internal erosion or piping is the process where water flows through dam materials, gradually eroding them and compromising structural integrity.
- Proper design, construction, maintenance, and monitoring, along with stringent safety regulations, are crucial for minimizing the risk associated with dams and ensuring the safety of downstream communities.

8. What is oil pollution? What are its impacts on the marine ecosystem? In what way is oil pollution particularly harmful for a country like India? (150 words) (10 Marks)

Approach:

Introduction:
Define oil pollution and its occurrence in marine ecosystems. Briefly mention its global significance.

Body:
Explain the impacts of oil pollution on the marine ecosystem, including damage to marine life, habitats, and water quality.
Discuss the specific challenges and vulnerabilities faced by India due to its extensive coastline and dependence on marine resources.
Highlight the importance of stringent regulations and proactive measures to prevent and respond to oil pollution incidents.

Conclusion:
Summarize the detrimental effects of oil pollution on the marine ecosystem and underscore the significance of addressing this issue for a country like India with a vast coastline and dependence on marine resources.

Answer:
- **Oil pollution** refers to the release of crude oil or refined petroleum products into the environment, particularly into water bodies like oceans, seas, or rivers. This pollution can occur due to various reasons, including oil spills from tanker accidents, offshore drilling operations, illegal dumping of waste oil, and industrial discharges. **(e.g.; Exxon Valdez)**

Impacts of Oil Pollution on the Marine Ecosystem:
- **Harm to Marine Life:** Oil spills can be highly toxic to marine organisms. The oil forms a slick on the water's surface, making it difficult for marine birds, mammals, and fish to breathe and maintain body temperature. The oil can also coat the feathers and fur of animals, reducing their buoyancy and insulating properties**. (e.g.; fish larvae mortality).**
- **Contamination of Food Chain:** Oil pollution can enter the food chain when smaller organisms absorb oil and are then consumed by larger predators. This can lead to the accumulation of toxins in the tissues of various marine species, including those consumed by humans. **(e.g.; phytoplankton decline).**
- **Destruction of Habitats:** Oil can smother and kill delicate marine habitats, such as coral reefs, mangroves, and seagrass beds. These habitats provide essential breeding and feeding grounds for numerous marine species**. (e.g.; seabirds' feather clumping).**

Why Oil Pollution Is Particularly Harmful for India:

- **Vast Coastal Area:** India has an extensive coastline, making it highly susceptible to oil pollution from shipping activities, offshore drilling, and coastal industries. The entire coastline, including the Arabian Sea and the Bay of Bengal, is at risk. **(e.g.; Chennai oil spill).**
- **Rich Biodiversity:** India's coastal and marine ecosystems are incredibly diverse and support a wide range of species, including commercially valuable fish. Oil pollution can disrupt these ecosystems and impact livelihoods dependent on fisheries.
- **Tourism:** India's coastal regions are major tourist destinations, contributing significantly to the economy. Oil pollution and its impact on coastal aesthetics and recreational activities can deter tourists and harm local economies.
- Oil pollution poses a grave threat to marine ecosystems worldwide, and its impact can be particularly harmful to countries like India due to their vast coastlines, rich biodiversity, dependence on fisheries, tourism, and challenges in responding to spills. Understanding and addressing this issue is crucial for the preservation of marine environments and the sustainable livelihoods of coastal communities.

9. Winning of Hearts and Minds in terrorism-affected areas is an essential step in restoring the trust of the population. Discuss the measures adopted by the Government in this respect as part of the conflict resolution in Jammu and Kashmir. (150 words) (10 Marks)

> **Approach:**
> **Introduction:**
> Introduce the concept of "Winning Hearts and Minds" in conflict zones and its importance in restoring trust in terrorism-affected areas.
>
> **Body:**
> Discuss measures adopted by the Government in conflict resolution in Jammu and Kashmir.
> Highlight initiatives focusing on development, education, and economic opportunities.
> Analyze efforts to engage with local communities and address grievances.
> Evaluate the impact of these measures on trust-building and conflict resolution.
>
> **Conclusion:**
> Summarize the role of "Winning Hearts and Minds" strategies in the Jammu and Kashmir conflict resolution, emphasizing the importance of addressing local concerns for lasting peace.

Answer:

- In Jammu and Kashmir, measures such as **'Operation Sadhbhavana'** aimed to restore public trust as per the Ministry of Home Affairs. A deep dive into the government's conflict resolution strategies is paramount. "**Winning Hearts and Minds**" means a strategy focusing on securing the local population's trust and allegiance, essential for peace and stability in terrorism-affected regions.

Measures Adopted by the Government:

- **Development Initiatives:** The government has initiated various development projects focused on enhancing infrastructure, education, healthcare, and employment prospects in the region.
  - For instance, the Prime Minister's Development Package for Jammu and Kashmir encompasses initiatives such as road construction, the establishment of educational institutions, and the development of tourism infrastructure.
- **Economic Empowerment:** The government has actively promoted economic empowerment through programs like "Udaan" and "Himayat," which facilitate skill development and offer employment opportunities, particularly to the youth in Jammu and Kashmir.

- o As a successful example, the Udaan program has trained numerous young individuals and placed them in various industries, thus contributing to a reduction in unemployment rates and mitigating radicalization risks.
- **Political Engagement:** Efforts have been made to foster political engagement by facilitating the participation of local political representatives in the democratic process. This inclusivity allows them to effectively voice and address the aspirations of their constituents.
  - o The District Development Council (DDC) elections in 2020 are a notable example, enabling local leaders to actively engage in governance and decision-making processes.
- **Counterterrorism Operations with Minimal Civilian Impact:** Security forces have adopted a more precise and cautious approach in counterterrorism operations, with an emphasis on minimizing collateral damage and civilian casualties.
  - o For instance, the "Operation All Out" strategy has focused on neutralizing terrorist elements while taking measures to ensure the safety of civilians.
- **Rehabilitation and Surrender Policies:** The government has introduced policies to encourage militants to reintegrate into mainstream society. These policies provide various incentives, including financial support, vocational training, and counseling, to former militants who renounce violence.
- Winning the hearts and minds of the population in terrorism-affected areas, like Jammu and Kashmir, is a complex and long-term endeavor. The government's efforts, as highlighted by these measures and examples, aim to address the root causes of conflict, build trust, and promote peace, stability, and development in the region.

10. The use of unmanned aerial vehicles (UAVs) by our adversaries across the borders to ferry arms/ammunitions, drugs, etc., is a serious threat to the internal security. Comment on the measures being taken to tackle this threat. (150 words) (10 Marks)

Approach:
Introduction:
Introduce the threat of adversaries using UAVs for illicit purposes along border areas, highlighting its seriousness in compromising internal security.

Body:
Discuss the measures being taken to counter this threat, including technological advancements, surveillance, and intelligence.
Examine the role of defense forces, border security agencies, and law enforcement in detecting and preventing such activities.
Analyze international cooperation and agreements to address cross-border UAV threats.
Highlight the importance of ongoing efforts to enhance security and mitigate risks.

Conclusion:
Summarize the multifaceted approach being employed to tackle the threat of UAVs used by adversaries, emphasizing the need for vigilance and adaptability in ensuring internal security.

Answer:
- The use of unmanned aerial vehicles (UAVs), commonly known as drones, by adversaries across borders to smuggle arms, ammunition, drugs, and other illicit items poses a significant threat to internal security. Governments and security forces are actively addressing this threat through various measures and initiatives.
- **Threats from UAV's:**

- **Stealth and Infiltration**: UAVs can operate silently and are often difficult to detect by conventional border security systems. Adversaries can use them to clandestinely transport illegal goods across borders without raising suspicion.
- **Payload Capacity**: Modern drones have a substantial payload capacity, allowing them to transport significant quantities of arms, ammunition, or drugs. This enables adversaries to bypass traditional smuggling methods and transport larger volumes more quickly.
- **Difficulties in Tracking**: Tracking the source of these UAVs can be challenging, as they can be remotely operated from a considerable distance. This makes it harder for law enforcement agencies to apprehend those responsible for smuggling operations.

Measures being taken to tackle these threats:
- **Enhanced Detection Technology**: Invest in advanced drone detection and countermeasures technology to identify and neutralize rogue UAVs. **(e.g.; DRDO's anti-drone system).**
- **Regulation and Legislation**: Implement and enforce strict regulations on the purchase, operation, and import/export of drones to curb their misuse. **(e.g.; DGCA's CAR Section 3).**
- **International Cooperation**: Work with neighboring countries to establish coordinated efforts to combat cross-border drone smuggling. **(e.g.; The International Civil Aviation Organization (ICAO) is working on developing global guidelines for drone regulations)**
- **Training and Capacity Building**: Train border security personnel to effectively detect and respond to UAV threats.
- **Public Awareness**: Educate the public about the potential risks associated with drones and encourage responsible drone use. **(e.g.; Civil Aviation Authority in the UK has launched educational campaigns)**
- The use of UAVs by adversaries to ferry illegal goods across borders is a pressing concern for internal security. Addressing this threat requires a multi-faceted approach that combines technology, regulation, international cooperation, and public awareness to effectively mitigate the risks posed by these unmanned aerial vehicles.

11. Most of the unemployment in India is structural in nature Examine the methodology adopted to compute unemployment in the country and suggest improvements. (250 words) (15 Marks)

Approach:
Introduction:
Introduce the prevalence of structural unemployment in India and the importance of assessing it accurately.

Body:
Explain the current methodology used to compute unemployment, including surveys and data sources.
Discuss the limitations and challenges in the existing methodology.
Suggest improvements, such as incorporating underemployment data, enhancing data collection techniques, and considering demographic factors.
Analyze how improved methodologies can provide a more accurate picture of structural unemployment in India.

Conclusion:
Summarize the need for refining unemployment measurement methods to address structural unemployment challenges and formulate better policy responses.

Answer:

- The assessment that most of the unemployment in India is structural in nature implies that it results from a mismatch between the skills possessed by the workforce and the skills demanded by the job market. The primary method used to compute unemployment in India is based on data collected by the National Sample Survey Office (NSSO) through large-scale sample surveys.

Methodology to Compute Unemployment in India:

- **Usual Principal and Subsidiary Status (UPSS):** This approach categorizes individuals into different employment statuses based on their primary and subsidiary economic activities during a specific reference period.
- **Current Weekly Status (CWS):** In addition to UPSS, the CWS approach captures employment and unemployment status for a reference week preceding the survey.
- **Usual Status vs. Current Status:** The difference between usual and current status helps classify individuals into categories such as 'unemployed,' 'underemployed,' and 'employed.'
- **Labor Force Participation Rate (LFPR):** The LFPR measures the proportion of the working-age population that is either employed or actively seeking employment.
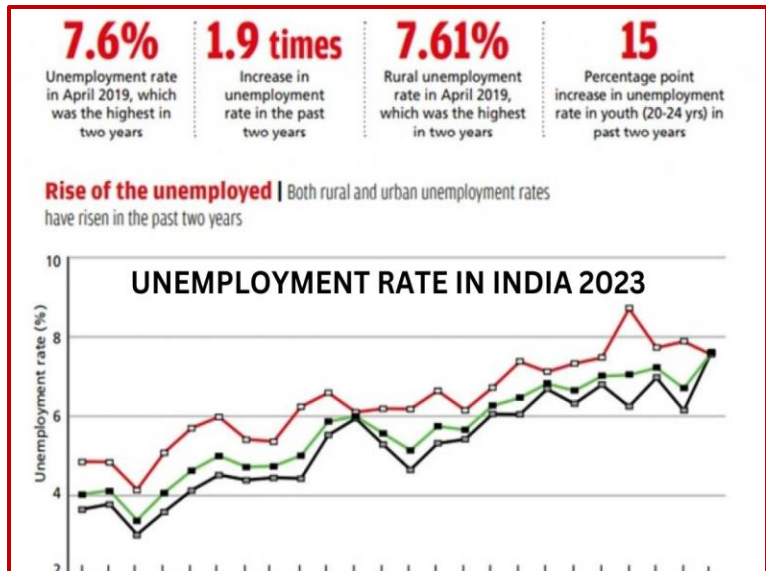
Improvements to the Methodology:

- **Frequency of Data Collection:** Increase the frequency of large-scale surveys to provide more up-to-date and accurate information on the employment situation. Currently, the NSSO conducts such surveys infrequently, leading to gaps in data.
- **Use of Technology:** Leverage technology, such as real-time data collection and analysis, mobile surveys, and big data analytics, to improve the speed and accuracy of unemployment data reporting.
- **Broadening Definitions:** Consider a broader definition of employment that includes gig workers, informal sector workers, and those engaged in platform-based employment, which are often excluded from traditional employment statistics.
- **Skills Mismatch Data:** Include questions in surveys to gather data on skills and qualifications of job seekers and compare them with the skills demanded by employers. This can help identify structural unemployment and inform skill development programs.
- By implementing these improvements, India's methodology for computing unemployment can become more comprehensive, timely, and nuanced. This, in turn, will enable policymakers to better address structural unemployment and develop targeted interventions to bridge the skills gap and enhance employment opportunities in the country.

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12. Distinguish between care economy and monetized economy. How can care economy be brought into monetized economy through women empowerment? (250 words) (15 Marks)

Approach:
Introduction:
Introduce the concepts of the care economy and monetized economy, emphasizing their distinctions and the role of women in the care economy.

Body:
Define and distinguish between the care economy (unpaid caregiving, domestic work) and the monetized economy (formal employment, economic activities).
Discuss the challenges and inequalities faced by women in the care economy.
Explain how women empowerment measures, such as education, skill development, and economic opportunities, can bridge the gap between the care and monetized economies.
Provide examples of policies and initiatives promoting women's participation in both economies.

Conclusion:
Summarize the importance of empowering women to bridge the gap between the care and monetized economies, highlighting the positive outcomes for individuals and society as a whole.

Answer:

- The care economy and the monetized economy are two distinct but interconnected aspects of economic activity. According to International Labour Organization, 2018, Women perform 76.2% of total hours of unpaid care work, more than three times as much as men globally.

Distinguishing Between Care Economy and Monetized Economy:

Care Economy	Monetized Economy
• **The care economy encompasses all unpaid and often invisible work related to caregiving, nurturing, and maintaining human well-being. This includes activities like childcare, eldercare, domestic work, and emotional support.**	• The monetized economy refers to the formal market-based economic activities that are recognized, measured, and compensated through wages, salaries, and financial transactions. This includes industries, businesses, and services that generate income.
• Unpaid and Under-Recognized**: Care work, historically performed within families and communities, is typically unpaid or underpaid. It often falls disproportionately on women, leading to gender inequalities in the distribution of unpaid care work.**	• **Paid Work**: In the monetized economy, individuals receive compensation for their labor and services, and these activities contribute directly to GDP and economic growth.
• **The care economy** focuses on the well-being **and maintenance of individuals and communities rather than the production of goods or services for market exchange.**	• The monetized economy is the **dominant economic system,** characterized by the buying and selling of goods and services in markets, wage labor, and profit-driven enterprises.
• **It is** essential for social reproduction **and the overall functioning of society but is typically non-monetized and lacks formal recognition in economic systems.**	• It is often **measured and quantified using economic indicators** such as GDP and employment statistics.

How can care economy be brought into monetized economy through women empowerment?

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- **Recognizing and Valuing Unpaid Care Work**: Policies and programs should acknowledge and quantify the economic value of caregiving, which can then be factored into social safety nets and economic planning. (*e.g.;* The National Rural Employment Guarantee Act (NREGA) in India provides wage employment to rural households, including women.)
- **Access to Education and Training**: Empowering women through education and skills training can enable them to enter the formal labor market and access paid opportunities within the monetized economy. (*e.g.;* **the Indian government's Skill India program focuses on providing women with skills and training to enhance their employability in various sectors.**)
- **Support for Women's Entrepreneurship**: Encouraging women's entrepreneurship can create avenues for women to participate in the monetized economy. This can include access to credit, business development support, and training. (*e.g.;* **the Self-Help Group (SHG) movement in India has empowered women to form collectives, access microfinance, and start their own businesses, thus contributing to the monetized economy.**)
- **Flexible Work Arrangements**: Policies promoting flexible work arrangements can help women balance their roles in both the care economy and the monetized economy. (*e.g.;* t**he Maternity Benefit (Amendment) Act in India.**)
- **Gender-Responsive Budgeting**: Governments should allocate resources and design budgets that address gender disparities, including investments in care infrastructure like affordable childcare facilities and elderly care centers.
- The care economy and the monetized economy are interconnected, and women's empowerment plays a crucial role in bringing unpaid care work into the monetized sector. Recognizing, valuing, and supporting women's contributions in both spheres can lead to greater gender equality and economic development in India and beyond.

13. Explain the changes in cropping pattern in India in the context of changes in consumption pattern and marketing conditions. (250 words) (15 Marks)

Approach:
Introduction:
Introduce the topic of changing cropping patterns in India, highlighting the impact of shifts in consumption patterns and marketing conditions on agriculture.

Body:
Discuss changes in consumption patterns, including increased demand for diverse crops like fruits, vegetables, and high-value crops.
Examine marketing conditions, such as price fluctuations and access to markets, affecting crop choices.
Explain how these factors influence farmers' decisions to shift from traditional to cash crops.
Provide examples and data on changing cropping patterns in response to market demands.

Conclusion:
Summarize the complex interplay between changes in consumption patterns, marketing conditions, and cropping patterns in India, emphasizing the need for balanced and sustainable agricultural strategies.

Answer:
Changes in cropping patterns in India are influenced by a combination of factors, including consumption patterns, marketing conditions, technological advancements, and government policies. **As per Agriculture Census, India 2015-2016** the Cropped area for cereals declined by 2.3% over the last decade while the area for fruits and vegetables rose by 2.9%.
Changes in cropping pattern:

- **Diversification:** These changes in consumption patterns and marketing conditions have led to greater crop diversification. Farmers are increasingly cultivating a mix of crops to meet both local and global demands.
- **Crop Rotation:** Crop rotation practices are evolving to maintain soil health and fertility while catering to changing market conditions. Farmers often rotate between cash crops and food crops to balance profitability and sustainability.
- **Geographic Shift:** Crops that were traditionally grown in specific regions are now cultivated in new areas where market conditions and infrastructure are favorable. For instance, the cultivation of grapes and apples has expanded to regions not traditionally associated with these crops.

Changes in consumption pattern:
- **Shift towards High-Value Crops:** Changing consumption patterns, driven by rising incomes and urbanization, have led to an increased demand for high-value crops such as fruits, vegetables, and horticultural products.
  - Example: The increased consumption of fruits like mangoes, apples, and bananas has encouraged farmers to diversify their cropping patterns to meet the growing demand for these perishable goods.
- **Preference for Processed Foods:** As consumers increasingly opt for processed and packaged foods, the demand for raw materials used in food processing, such as oilseeds, pulses, and spices, has risen.
- **Changing Diet Preferences:** Changes in dietary habits have led to an increased demand for protein-rich foods, driving the cultivation of crops like pulses, soybean, and oilseeds.
  - Example: The popularity of plant-based diets and the demand for pulses as a protein source have encouraged farmers to cultivate more pulses.

Changes in Marketing Conditions:
- **Market Accessibility and Infrastructure:** Improved transportation networks, storage facilities, and the expansion of organized retail chains have facilitated the marketing of perishable crops, encouraging farmers to grow more of these crops.
  - Example: The growth of organized retail chains in India has created new avenues for farmers to sell fresh produce like vegetables and fruits directly to consumers.
- **Price Fluctuations and Risk Mitigation:** Farmers often respond to market price fluctuations and risks by diversifying their cropping patterns to include both staple and cash crops.
  - Example: Farmers may choose to cultivate maize alongside rice and wheat to hedge against price fluctuations in the cereal market.
- **Export Opportunities:** Changes in global demand and international trade agreements can influence cropping patterns, as farmers seek to capture export opportunities.
- Changes in consumption patterns and marketing conditions play a significant role in shaping cropping patterns in India. As consumer preferences evolve, farmers adapt by cultivating crops that align with market demand. Additionally, access to efficient marketing channels and infrastructure, along with government policies, influence farmers' decisions on which crops to grow. These dynamic interactions between consumption, markets, and agriculture contribute to the evolving cropping patterns in the country.

14. What are the direct and indirect subsidies provided to farm sector in India? Discuss the issues raised by the World Trade Organization (WTO) in relation to agricultural subsidies. (250 words) (15 Marks)

Approach:
Introduction:
Introduce the concept of agricultural subsidies in India and their significance for the farm sector's development.

Answer:
- In India, the farm sector receives both direct and indirect subsidies to support agricultural production and the welfare of farmers. These subsidies are aimed at boosting food security, reducing rural poverty, and ensuring a stable income for farmers. However, the World Trade Organization (WTO) has raised concerns about the impact of these subsidies on global agricultural trade.
- **India's agriculture subsidy**: Approximately ₹2.83 lakh crores with direct subsidies accounting for 1.5% of GDP.

Direct Subsidies in Farm Sector:
- **MSP (Minimum Support Price) Subsidy:** The government provides price support to farmers by purchasing agricultural commodities such as rice, wheat, and pulses at MSP rates. The difference between the MSP and market price, if any, is paid to farmers as a subsidy.
- **Fertilizer Subsidy:** Fertilizers are essential for agriculture. The government subsidizes fertilizers to ensure their availability at affordable prices to farmers. **(e.g.;- urea subsidy)**
- **Crop Insurance:** The government subsidizes premiums for crop insurance, protecting farmers from crop losses **(e.g.;- Pradhan Mantri Fasal Bima Yojana).**

Indirect Subsidies in Farm Sector:
- **Electricity Subsidy:** Many states provide subsidized electricity to farmers for agricultural purposes, including irrigation and running pumps.
- **Power Subsidy for Agricultural Equipment:** Subsidies are offered for purchasing and operating electric and diesel pumps and other agricultural machinery. **(e.g.;- state electricity board subsidies)**
- **Public Distribution System (PDS):** The PDS offers food grains to eligible families at highly subsidized prices, indirectly benefiting the farm sector by maintaining demand for grains.

WTO Concerns on Agricultural Subsidies:
- **Amber Box Subsidies:** WTO perceives certain Indian subsidies as trade-distorting (e.g.;- MSP) and believes they exceed the permitted limits.
- **Special Safeguard Mechanism**: India's insistence on this to protect its farmers is seen as a hindrance to trade negotiations **(e.g.;- protecting from import surges).**
- **Blue Box Measures:** India has reservations on subsidies provided under this, as they might favor developed nations **(e.g.;- direct payment schemes).**
- **Food Stockholding:** Concerns raised over India's public stockholding for food security purposes, considering it could distort trade **(e.g.;- buffer stock for PDS).**
- India argues that its subsidies are essential for food security and livelihood support for millions of farmers. Balancing the need for food security with international trade obligations remains a complex challenge, and

ongoing discussions at the WTO aim to find a resolution that accommodates the interests of both developed and developing countries.

15. The adoption of electric vehicles is rapidly growing worldwide. How do electric vehicles contribute to reducing carbon emissions and what are the key benefits they offer compared to traditional combustion engine vehicles? (250 words) (15 Marks)

Approach:
Introduction:
Introduce the global trend of increasing electric vehicle (EV) adoption and its relevance in reducing carbon emissions.

Body:
Explain how EVs contribute to carbon emission reduction through zero tailpipe emissions.
Discuss the higher energy efficiency of EVs compared to combustion engine vehicles.
Highlight cost savings, reduced noise pollution, and energy independence as key benefits of EVs.
Analyze the long-term environmental advantages and improved vehicle performance.

Conclusion:
Summarize the significant role of electric vehicles in reducing carbon emissions and the multiple advantages they offer over traditional combustion engine vehicles, promoting sustainability and a cleaner environment.

Answer:
- Electric vehicles (EVs) play a crucial role in reducing carbon emissions and offer several key benefits compared to traditional combustion engine vehicles. **According to IPCC the Electric vehicles (EVs) promise significant carbon emission reductions compared to conventional vehicles.** Their global surge and advantages deserve attention.
- **India is the fourth highest emitter of carbon dioxide globally** and at the recently concluded COP26, it has pledged to reduce its carbon emissions to net-zero by the year 2070.
- **India aims to achieve EV sales accounting for 30% of private cars,** 70% of commercial vehicles, and 80% of two and three-wheelers by the year 2030.

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Contributions to Reducing Carbon Emissions:
- **Zero Tailpipe Emissions:** EVs produce zero tailpipe emissions since they run on electricity. This reduces local air pollution and greenhouse gas emissions in urban areas. **(e.g.; In cities like Delhi, notorious for air pollution, the adoption of electric buses and two-wheelers has led to improved air quality)**
- **Lower Well-to-Wheel Emissions:** The overall emissions associated with EVs, including those from electricity generation, are generally lower compared to traditional vehicles powered by fossil fuels. **(e.g.; India's increasing renewable energy capacity.)**
- **Efficiency Gains:** EVs are more energy-efficient than internal combustion engine (ICE) vehicles. A higher percentage of energy from the grid is converted into vehicle movement. **(e.g.; Electric scooters and rickshaws have gained popularity in Indian cities like Bengaluru and Delhi**)

Benefits of Electric Vehicles Compared to ICE Vehicles:
- **Lower Operating Costs:** EVs have lower operating costs since electricity is cheaper than gasoline or diesel, and they have fewer moving parts, resulting in reduced maintenance expenses. **(e.g.;** The Tata Nexon EV, an electric SUV in India.)
- **Reduced Noise Pollution:** EVs are quieter than traditional vehicles, reducing noise pollution in urban areas and providing a quieter and more pleasant commuting experience. **(e.g.;** Electric buses like the Olectra-BYD eBuzz K9 in Mumbai help reduce noise pollution.)
- **Incentives and Subsidies:** Many governments, including India, offer incentives and subsidies to encourage the adoption of EVs, making them more affordable. **(e.g.;** India's Faster Adoption and Manufacturing of Hybrid and Electric Vehicles (FAME) scheme.)
- **Energy Security:** EVs reduce a country's dependence on imported oil, enhancing energy security.
- The rapid adoption of electric vehicles is not only environmentally beneficial but also economically advantageous for consumers and contributes to a more sustainable and resilient transportation system, aligning with India's and the world's climate goals.

16. What is the main task of India's third moon mission which could not be achieved in its earlier mission? List the countries that have achieved this task. Introduce the subsystems in the spacecraft launched and explain the role of the "Virtual Launch Control Centre at the Vikram Sarabhai Space Centre which contributed to the successful launch from Sriharikota. (250 words) (15 Marks)

Approach:

Introduction:
Introduce India's third moon mission and its unique objective, highlighting the importance of achieving what was not accomplished in earlier missions.

Body:
Explain the specific task of the third moon mission, such as soft landing and rover deployment.
List countries that have successfully achieved this task (e.g., USA, USSR, China).
Introduce the subsystems in the spacecraft launched, including lander, rover, and orbiter.
Describe the role of the "Virtual Launch Control Centre" at the Vikram Sarabhai Space Centre in ensuring a successful launch from Sriharikota.

Conclusion:
Summarize the significance of India's third moon mission, its goals, and the collaborative efforts that contribute to its success.

Answer:

- India became the 4th nation to land a spacecraft on the moon. India's third moon mission is called "Chandrayaan-3," It also has an objective of developing and demonstrating new technologies required for inter-planetary missions.
- **Main Task of India's Third Moon Mission**: its main task is to demonstrate the capability of safe landing and roving on the lunar surface especially at the moon's south pole.

Countries that have successfully landed on the moon are as follows:

Russia

| Year	Achievement
1959	Russia achieved the remarkable feat of executing the world's inaugural lunar landing.
1966	Building upon their earlier success, Russia further solidified its prowess by accomplishing the world's first successful soft lunar landing.
1970	Continuing their trailblazing endeavours, Russia's unmanned mission not only reached the moon but also accomplished the retrieval of lunar samples, showcasing their scientific ingenuity.

USA

Year	Achievement
1966	The United States, in a demonstration of scientific prowess, achieved its own successful soft lunar landing shortly after Russia's milestone.
2022	Standing on the shoulders of past achievements, the US has impressively secured an unparalleled record with 11 successful soft landings, underscoring its position as a leader in lunar exploration. Additionally, the US stands alone in having successfully landed humans on the lunar surface, marking a monumental

accomplishment.

China

Year	Achievement
2013	In a significant resurgence of lunar exploration, China's Chang'e 3 lander made a historic touchdown, marking the first lunar landing since the USSR's Luna 24 mission.
2019	Pushing the boundaries of exploration even further, China's Chang'e 4 achieved an unprecedented feat by conducting a successful soft landing on the enigmatic dark side of the moon. This pioneering achievement solidified China's status as the first nation to accomplish a spacecraft's gentle landing on the hitherto unexplored 'dark' side.
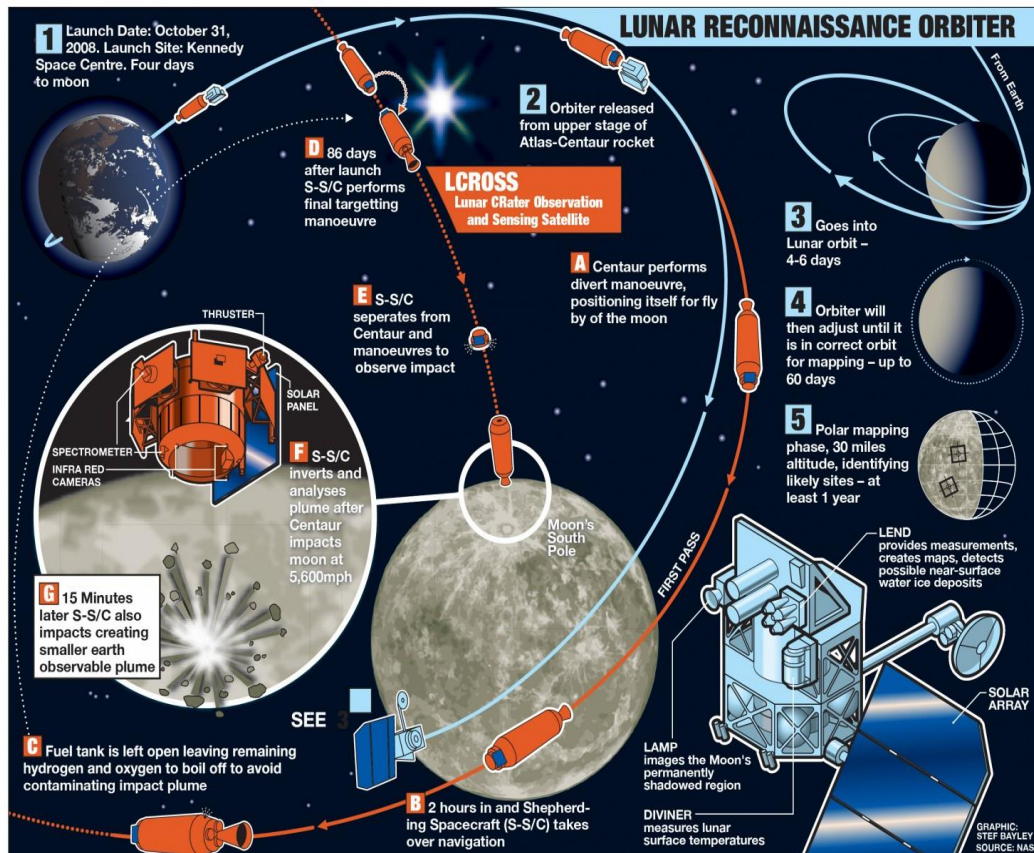
Typical Subsystems in Lunar Spacecraft:

- **Orbiter:** The orbiter is a spacecraft designed to orbit the Moon. It often carries scientific instruments to study the lunar surface, map its topography, and analyze its composition.
- **Lander:** The lander is designed to make a soft landing on the lunar surface. It typically contains scientific instruments to study the Moon's surface and surroundings. The lander is equipped with landing gear and propulsion systems for a controlled descent.
- **Rover (if included):** Some lunar missions include rovers that can move across the lunar surface. Rovers are equipped with various scientific instruments to conduct in-situ measurements and sample collection.

Role of the 'Virtual Launch Control Centre' at VSSC:

- **Mission Planning:** Engineers and scientists use the control center to plan the mission's trajectory, objectives, and timeline. They calculate the launch window, evaluate potential landing sites, and make critical decisions about the mission.
- **Monitoring:** During the launch phase, the control center monitors the spacecraft's health and trajectory in real-time. Any anomalies or issues can be addressed promptly to ensure a successful launch.
- **Communication:** The control center manages communication between mission operators and the spacecraft, ensuring that commands are transmitted and received correctly.
- **Data Analysis:** Data collected during the mission are analyzed and interpreted at the control center. Scientists and engineers can make decisions based on this data, adjusting the mission's course or activities as needed.
- Embracing technological advancements like the Virtual Launch Control Centre epitomizes India's commitment to space exploration. Chandrayaan-3, bearing national hopes, demonstrates the nation's scientific prowess and vision for the future in outer space exploration.

17. Comment on the National Wetland Conservation Programme initiated by the Government of India and name a few India's wetlands of international importance included in the Ramsar Sites. (250 words) (15 Marks)

Approach:
Introduction:
Introduce the National Wetland Conservation Programme in India and its importance in preserving wetland ecosystems.

Body:
Discuss the objectives and key features of the program, emphasizing conservation and sustainable use.
List and briefly describe a few of India's wetlands of international importance designated as Ramsar Sites.
Explain the significance of Ramsar Sites in global biodiversity conservation efforts.

Conclusion:
Summarize the government's commitment to wetland conservation through the National Wetland Conservation Programme and highlight the role of Ramsar Sites in preserving these critical ecosystems.

Answer:
- The National Wetland Conservation Programme (NWCP) is an initiative launched by the Government of India to protect and conserve the country's wetland ecosystems. *India is home to 2,716 wetlands, covering an area of 1.56 million hectares (source: ISFR 2019). Of these, 42 are recognized as Ramsar Sites of international importance.*

Dimensions of the Programme:
- **Objective:** The primary objective of the NWCP is to conserve and manage wetlands, which are vital for biodiversity, water resources, and climate resilience, through various measures such as habitat restoration, pollution control, and sustainable use.
  - **Efforts:** Restoration of water quality **(eg; Chilika Lake),** invasive species management **(eg; Keoladeo Ghana),** and hydrological interventions
- **Implementation:** The NWCP is implemented through a collaborative approach involving central, state, and local government agencies, as well as non-governmental organizations and community participation.
- **Funding:** The program provides financial assistance for the conservation and management of wetlands, including support for site-specific action plans, research and monitoring, capacity building, and awareness campaigns.

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- **Community Participation:** The NWCP emphasizes local community involvement for sustainable wetland management.
  - o **Success Stories:** Community-based **tourism (eg; Vembanad Kol)** and traditional fishery rights **(eg; Nalsarovar).**

India's Wetlands of International Importance (Ramsar Sites):
- **Chilika Lake, Odisha**: Chilika Lake is the largest coastal lagoon in India and the second largest in the world. It is home to a diverse range of aquatic flora and fauna, including the endangered Irrawaddy dolphin. The lake supports both local fisheries and tourism.
- **Keoladeo National Park (Bharatpur Bird Sanctuary), Rajasthan**: This wetland is a renowned bird sanctuary and a World Heritage Site. It hosts thousands of migratory birds, including the Siberian crane, during the winter months.
- **Sundarbans, West Bengal**: The Sundarbans is the largest mangrove forest in the world and a Ramsar Site. It provides critical habitat for the Bengal tiger and numerous other species. The mangroves also act as a natural buffer against coastal erosion and storm surges.
- **Loktak Lake, Manipur**: Loktak Lake is the largest freshwater lake in northeastern India. It contains unique floating islands called "phumdis" and supports a rich diversity of aquatic life. The lake is also integral to the livelihoods of local communities.
- **Bhoj Wetland, Madhya Pradesh**: This wetland is known for the historic significance of the 11th-century Bhojeshwar Temple located on its banks. It provides habitat to several bird species and is an important site for biodiversity conservation.
- The Ramsar Sites in India, along with the NWCP, reflect the government's commitment to the conservation and sustainable management of wetlands. These initiatives are essential for preserving the ecological, cultural, and socio-economic values associated with wetlands while ensuring their long-term viability.

18. The Intergovernmental Panel on Climate Change (IPCC) has predicted a global sea level rise of about one metre by AD 2100. What would be its impact in India and the other countries in the Indian Ocean region? (250 words) (15 Marks)

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Approach:
Introduction:
Introduce the IPCC's prediction of a one-meter global sea level rise by AD 2100 and its relevance for India and the Indian Ocean region.

Body:
Discuss the potential impacts of sea level rise on coastal regions in India, including flooding, erosion, and displacement.
Explore the broader consequences for neighboring countries in the Indian Ocean region, such as the Maldives, Bangladesh, and Sri Lanka.
Highlight the socio-economic and environmental challenges posed by sea level rise, including threats to infrastructure, agriculture, and biodiversity.

Conclusion:
Summarize the significance of addressing sea level rise and the need for adaptation and mitigation strategies in India and the Indian Ocean region to mitigate its adverse effects.

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Answer:
- A predicted global sea level rise of about one meter by AD 2100, as projected by the Intergovernmental Panel on Climate Change (IPCC), would have significant and far-reaching impacts on India and other

countries in the Indian Ocean region.

Impact on India:
- **Coastal Erosion**: India, with a 7,516 km long coastline, will experience exacerbated coastal erosion. **(eg; - Puri and Gopalpur beaches).**
- **Agriculture**: Saline intrusion into fertile deltas will affect crop yield. **(eg; - Sunderbans delta).**
- **Loss of Habitat**: Mega-cities like Mumbai and Chennai risk submergence in low-lying areas.
- **Economic Impact:** Damage to infrastructure, particularly ports, affects trade. (**eg; - Ennore Port)**

The potential impacts in Indian ocean region:
- **Coastal Erosion and Land Loss:** Coastal areas in India, Bangladesh, and several island nations in the Indian Ocean region are particularly vulnerable to sea level rise. A one-meter rise could lead to extensive land loss and coastal erosion.
  - The Sundarbans delta region in India and Bangladesh, home to millions of people and critical biodiversity, is especially at risk. It's estimated that a one-meter sea level rise could submerge large portions of this region.
- **Saltwater Intrusion:** Rising sea levels can lead to saltwater intrusion into freshwater sources, affecting drinking water supplies and agricultural lands. In regions heavily dependent on agriculture, this could impact food security.
  - The Ganges-Brahmaputra Delta in Bangladesh, which is a major rice-producing region, is particularly susceptible to saltwater intrusion.
- **Loss of Biodiversity:** Coastal ecosystems, including mangroves, coral reefs, and wetlands, could be severely impacted by sea level rise. These ecosystems are crucial for biodiversity, fishery resources, and natural protection against storm surges.
  - India's Andaman and Nicobar Islands, known for their rich biodiversity and coral reefs, may face significant losses.
- **Regional Security Concerns:** Climate-induced displacement and resource scarcity can lead to regional security challenges, potentially affecting India's geopolitical landscape.
  - Competition for land and resources could strain relations between neighboring countries in the region.
- To address these challenges, countries in the Indian Ocean region must prioritize adaptation and mitigation strategies. This includes developing coastal protection measures, strengthening early warning systems for extreme weather events, promoting sustainable land-use planning, and investing in climate-resilient infrastructure. Regional cooperation is also crucial to address shared challenges and promote the sustainable development of vulnerable coastal regions in the face of rising sea levels.

19. What are the internal security challenges being faced by India? Give out the role of Central Intelligence and Investigative Agencies tasked to counter such threats. (250 words) (15 Marks)

Approach:
Introduction:
Introduce the concept of internal security challenges in India and the importance of intelligence and investigative agencies in addressing them.

Body:
Identify and discuss key internal security challenges, such as terrorism, insurgency, cyber threats, and communal tensions.
Explain the role of Central Intelligence Agencies like the Intelligence Bureau (IB) and Research and Analysis Wing (RAW) in gathering intelligence.
Discuss the responsibilities of investigative agencies like the National Investigation Agency (NIA) and Enforcement Directorate (ED) in handling cases related to internal security threats.
Analyze the collaborative efforts of these agencies with state police and security forces.

> **Conclusion**:
> Summarize the critical role played by Central Intelligence and Investigative Agencies in addressing India's internal security challenges and ensuring national safety and stability.

Answer:
- India, with its vast demography and unique challenges, ranks 102 out of 163 in the Global Peace Index 2020. India faces several internal security challenges, and the country's Central Intelligence and Investigative Agencies play a crucial role in countering these threats.

The internal security challenges being faced by India are as follows:
- **Terrorism**: India has been a target of various terrorist groups, both domestic and international. Some of the prominent threats include groups like Lashkar-e-Taiba (LeT), Jaish-e-Mohammed (JeM), and the Indian Mujahideen. These groups carry out attacks that aim to disrupt peace and stability within the country.
- **Naxalism and Left-Wing Extremism**: Naxalite insurgency affects several states in India, with groups like the Communist Party of India (Maoist) carrying out attacks and subverting governance in affected regions.
- **Insurgency in Jammu and Kashmir**: The conflict in Jammu and Kashmir involves separatist groups, cross-border terrorism, and local militancy, creating a complex security situation.
- **Cybersecurity Threats**: With the increasing digitization of services and communications, India faces cybersecurity threats from state and non-state actors. (**e.g.; WannaCry ransomware emphasize the need for fortified cyber infrastructure.)**
- **Communal and Religious Tensions**: Communal and religious tensions can lead to riots and conflicts, posing a significant internal security challenge.

Role of Central Intelligence and Investigative Agencies:
- **The Intelligence Bureau (IB)** and the Research and Analysis Wing (RAW) provide intelligence and counter-terrorism support. The National Investigation Agency (NIA) is responsible for investigating terrorism-related cases.
- **The Central Reserve Police Force (CRPF)** and various state police forces are involved in counter-insurgency operations. The National Security Guard (NSG) is a specialized force that handles counter-terrorism and hostage rescue situations.
- **The National Cyber Security Coordinator (NCSC)** coordinates efforts to protect critical information infrastructure. The Cyber Crime Units of various state police and the NIA investigate cybercrimes.
- **Local police and paramilitary forces** maintain law and order during such incidents. The National Integration Council (NIC) works on promoting communal harmony and national integration.
- **The Border Security Force (BSF)** is responsible for border security. The RAW provides intelligence on border-related issues.
- These Central Intelligence and Investigative Agencies, along with state police forces and paramilitary organizations, collaborate to address India's diverse internal security challenges. Their coordination and efforts are critical to maintaining peace, stability, and security within the country.

20. Give out the major sources of terror funding in India and the efforts being made to curtail these sources. In the light of this, also discuss the aim and objective of the "No Money for Terror (NMFT) Conference recently held at New Delhi in November 2022. (250 words) (15 Marks)

Answer:
- India faces challenges from terror financing with hawala transactions, fake currency, and cross-border smuggling. As per FATF (Financial Action Task Force), South Asia witnessed $4.5 billion illicit funds in 2020, of which India's share is significant.

Major Sources of Terror Funding:
- **Extortion:** Terrorist groups often extort money from businesses, individuals, and even government officials in exchange for protection or to prevent attacks. **(eg: Uri attack, 2016).**
- **Illegal Trade:** Terrorists engage in illegal activities such as drug trafficking, arms smuggling, and counterfeit currency circulation to generate funds. **(eg: Punjab Drug Crisis).**
- **Foreign Funding:** Terrorist organizations receive financial support from foreign sources, including individuals, organizations, or state sponsors of terrorism. **(eg: recent seizures in West Bengal).**
- **Hawala Transactions:** The hawala system, an informal and unregulated money transfer network, is used to move funds clandestinely without leaving a financial trail. **(eg: Mumbai 1993 blasts).**

Efforts to Curtail Terror Funding:
- **Financial Intelligence Unit (FIU):** The FIU-IND, India's financial intelligence agency, monitors financial transactions and reports suspicious activities related to money laundering and terror financing.
- **Anti-Money Laundering (AML) Laws:** India has stringent AML laws and regulations to prevent money laundering and track suspicious financial transactions.
- **Counter-Terrorism Financing (CTF) Framework:** India has a comprehensive CTF framework in place to identify and disrupt the financial flows of terrorist organizations.
- **International Cooperation:** India collaborates with international organizations such as the Financial Action Task Force (FATF) to combat terror financing on a global scale.
- **No Money for Terror (NMFT) Conference 2022:** The "No Money for Terror (NMFT) Conference" held in New Delhi in November 2022 aimed to strengthen global efforts to combat terror financing. The conference had the following objectives:
- **International Cooperation:** The NMFT Conference provided a platform for countries to share information and strategies to enhance cooperation in countering terror financing.
- **Policy Discussions:** Participants discussed policy measures and best practices to prevent terrorists from accessing funds, including through digital and cryptocurrency channels.

- **Tech Innovation:** The conference explored innovative technological solutions for tracking and disrupting terror financing networks in the digital age.
- To effectively counteract terror funding, a harmonious blend of domestic and international efforts is imperative. NMFT's spirit and India's initiatives together signal a robust fight against these insidious financing mechanisms, aiming for a more secure future.