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Time: 45 Min

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FOUNDATION DAY OF MUSLIM LEAGUE

Context

- On **December 30, 1906,** the All India Muslim League (AIML), which played a pivotal role in India's partition, was founded in **Dhaka.**

Background

- **On October 1, 1906**, thirty-five Muslim leaders in **Simla** submitted a memorandum urging the cautious adaptation of European-style institutions to safeguard Muslim interests.
- **The objectives** of the formation of Muslim leagues were:
  - Protection of Muslim Interests,
  - Promoting Political Awareness and Unity among Muslims,
  - Advocacy for Equal Educational Opportunities.

Factors Responsible for its formation

- **Reaction to the Indian National Congress (INC):** As the INC became increasingly nationalistic, many Muslims felt that their distinct cultural, religious, and social identity was not being adequately represented.
- **Decline of the Mughal Empire:** Following the decline of Mughals and due to the British colonial policies, many Muslims lost their traditional economic and political dominance.
- The establishment of institutions like **Aligarh Muslim University** which promoted English education among Muslims.

Key Resolutions

- **The Lucknow Pact:** In **1916,** the **Congress** under **Bal Gangadhar Tilak and the Muslim League** under **Muhammad Ali Jinnah** signed the Lucknow Pact.
  - The pact provided for joint Hindu-Muslim political action, agreeing on separate electorates for Muslims while accepting a more significant role for Muslims in the legislative process.
- **The Lahore Resolution, 1940:** The League's transformation into a mass movement under Jinnah culminated in the **Lahore Resolution.**
- Held in **March 1940,** this session called for an independent state for Muslims, asserting that Muslims would not receive fair treatment in a "Hindu Rashtra" dominated by Congress.

Shifts in Muslim League's Strategy

- **1920s Shift in Political Aspirations:** Following the Khilafat Movement's failure, the Muslim League began to reposition itself, advocating for Muslim-specific issues.
- **Emergence of Jinnah:** Muhammad Ali Jinnah's leadership in the late 1920s and 1930s saw the League transition into a mass movement.
- **1937 Provincial Elections:** The Congress's dominance and alleged sidelining of Muslim interests in governance reinforced Jinnah's narrative of Muslims requiring a separate nation.

Impact of league policy

- **Religious Polarization:** The League's demand for a separate Muslim state gradually led to religious polarization, pitting Hindus and Muslims against each other.
- **Rise of Communal Violence:** The idea of separate nations made the Hindu-Muslim divide more rigid, contributing to large-scale violence and distrust.
- **Political and Social Segregation:** The separate electorates and the League's emphasis on Muslim identity fostered a sense of segregation, having lasting effects on post-independence India.

Post-Independence Status

- The Muslim League's political presence in India faded after independence. In 1975, the All India Muslim League was formally dissolved in India.
- In Pakistan and later in Bangladesh too, the League broke into factions and did not survive long.

Concluding remarks

- **The AIML's journey reflects its dynamic evolution** from a dormant organisation focused on educational upliftment to a powerful political movement advocating Muslim political identity and autonomy.
- Under Jinnah's leadership, it became a catalyst for partition, leading to the creation of **Pakistan in 1947**—a development that irrevocably reshaped the Indian subcontinent's political landscape.

Source: IE

APPOINTMENT OF GOVERNOR OF KERALA

Context

- Rajendra Vishwanath Arlekar took the oath as the 23rd Governor of Kerala.

About Governor

- **Eligibility:** Citizen of India and has completed the age of thirty-five years.
  - Not a member of the Parliament and State Legislature.
  - Shall not hold any other office of profit.

- **Appointment of Governor:** The Governor of a State shall be appointed by the President.
- **Term of office of Governor:** Five years.
- **Constitutional Provisions:** The office of the Governor is defined in **Articles 153 to 162 of the Indian Constitution.**
- **Executive Role:** The Governor is the head of the state executive, and executive authority is vested in them.
  - They appoint the Chief Minister and other ministers, who are responsible to the state legislature.
  - Governors have the power to dissolve the state legislature (Vidhan Sabha) and call for elections.
- **Legislative Role:** The Governor summons, and dissolves the state legislature and can address the state legislature at the beginning of its sessions.
  - He has the power to reserve certain bills passed by the state legislature for the President's approval.
- **Judicial Role:** The Governor can grant pardons, reprieves, respites, or remissions of punishment in some cases. They also have the authority to commute sentences in certain circumstances.
  - The Governor is involved in the appointment of judges to the state's High Court.
- **Discretionary Powers:** In cases where the Chief Minister or the council of ministers cannot command a majority in the legislature, the Governor may exercise discretionary powers to invite a different person to form the government.

Source: TH

LINKING AADHAR WITH VOTER IDS

In News

- In recent years, India has seen significant debates on **linking Aadhaar with voter IDs.**

About the Initiative

- The Government of India started the facility of linking the Aadhar with the Voter ID or Electors Photo Identity Card (EPIC).
- The EPIC link with Aadhar is the campaign of Govt of India to stop the fraud made in the Voter Poll during the elections.
- There are various discrepancies in the voter system, which can be avoided after linking the Voter ID with the Aadahaar Card.

Benefits in Linking Aadhaar with Voter IDs:

- **Reduce Duplicate Voter IDs:** Linking Aadhaar helps remove multiple voter IDs issued to one person due to errors or manipulation.
  - Aadhaar assigns a unique identity to individuals and provides online real-time authentication, helping to ensure no duplicate voter IDs.
  - This can help prevent multiple registrations by the same person, especially in cases of domestic migration.
- **Enhance Transparency & Integrity:** Aadhaar provides real-time verification, reducing impersonation and boosting election credibility.
- **Clean Electoral Rolls:** It helps identify and remove duplicate or incorrect voter entries, ensuring an accurate voter list.
- **Efficient Election Management:** It allows easy tracking of voters, reducing errors and fraud in election processes.

EC's Proposal

- The Election Commission (EC) proposed amendments to the Representation of the People Act, 1950, and voter enrolment forms to delete the provision requiring voters to justify not linking Aadhaar with their Voter ID.
- The Union Law Ministry rejected the proposal, suggesting clarifications would suffice.
- In 2019, the EC again proposed linking Aadhaar with voter rolls.
- The Election Laws (Amendment) Bill, 2021 was passed by Parliament in December 2021, allowing voluntary linking, and the collection of Aadhaar numbers resumed from July 2022.

Challenges

- **Privacy Concerns**: There is an argument that linking Aadhaar with voter IDs compromises privacy rights, as Aadhaar data would be exposed.
  - without a robust data protection law, sharing Aadhaar data could lead to breaches, including misuse for targeted political advertising.
- **Exclusion of Non-Citizens**: Aadhaar isn't proof of citizenship, which may lead to non-citizens being included in the voter list.
- **Voter Enrollment Issues**: Citizens in rural areas or without Aadhaar may be excluded, and biometric data inaccuracies could cause authentication problems.

- **Administrative & Technological Challenges**: Aadhaar could help eliminate duplicate voter IDs, it cannot address other electoral issues, such as fraud, manipulation, or human errors in the process.
    - These problems are beyond the reach of technology and require administrative integrity.

Suggestions and Way Forward

- Linking Aadhaar with Voter IDs can strengthen elections but requires addressing privacy, inclusivity, and technical challenges.
- Transparent planning and safeguards are key to ensuring a fair, secure, and democratic electoral process.
- The ECI needs to address discrepancies in voter lists and ensure transparency.

Source:TH

CENTRE AMENDS PRISON MANUAL TO ADDRESS CASTE-BASED INEQUALITY

Context

- Recently, the Union Home Ministry has amended the **Model Prison Manual (2016) and the Model Prisons and Correctional Services Act (2023)** to address and eliminate caste-based discrimination within prisons across the country.
    - Earlier, the Supreme Court of India highlighted the pervasive issue of caste-based discrimination along with overcrowding, inadequate prison staff, and poor treatment of prisoners among prisoners.

Prison Manual in India

- **'Prisons' is a State subject** under the **State List of the Seventh Schedule** to the Constitution of India.
    - The management and administration of Prisons falls **exclusively in the domain of the State Governments**, and is governed by the **Prisons Act, 1894** and the **Prison Manuals of the respective State Governments.**
- The **Model Prison Manual,** prepared by the Bureau of Police Research and Development (BPR&D) under the **Ministry of Home Affairs (MHA)**, serves as a comprehensive guide for the superintendence and management of prisons in India.
    - It ensures uniformity in the basic principles governing prisons across states and union territories.

- Additionally, the **Model Prisons and Correctional Services Act, 2023,** was introduced to address all relevant issues relating to prison administration comprehensively.

Current Scenario

- The **National Crime Records Bureau's Prison Statistics of India 2022** revealed that **Scheduled Castes account for 22.4%** of the prison population, while **Scheduled Tribes make up 11%,** despite representing only about 8.6% of the general population.
    - It highlights the deep-rooted caste-based disparities that extend into the criminal justice system.
- Issues such as the division of *manual labor, segregation of barracks, and discriminatory provisions* against **denotified tribes and 'habitual offenders'** have been brought to light.

Judicial Interventions

- The **Supreme Court of India** declared several provisions in state prison manuals **unconstitutional** for violating Articles 14, 15, 17, 21, and 23 of the Constitution of India.
- The judgment directed all states and union territories to revise their prison manuals to eliminate discriminatory practices within three months.

Key Features of the Model Prison Manual (2016)

- **Institutional Framework:** The manual outlines the organizational structure of prisons, including the roles and responsibilities of prison staff.
    - It emphasizes the need for a well-defined hierarchy to ensure efficient management.
- **Custodial Management:** It focuses on the procedures for the admission, classification, and transfer of prisoners.
    - It includes guidelines for maintaining discipline and security within the prison.
- **Medical Care:** The manual provides detailed instructions on the medical examination and treatment of prisoners.
    - It highlights the importance of regular health check-ups and the provision of adequate medical facilities.
- **Rehabilitation and Welfare:** One of the key objectives of the manual is the reformation and rehabilitation of prisoners.
    - It includes provisions for vocational training, education, and after-care programs to help prisoners reintegrate into society.

- **Special Categories of Prisoners:** The manual addresses the needs of specific groups such as women prisoners, young offenders, and high-security prisoners.
  - It includes guidelines for their treatment and management.

Key Provisions of the Recent Amendment

- **Prohibition of Caste-Based Discrimination:** The new rules explicitly prohibit any form of discrimination, classification, or segregation of prisoners based on their caste.
  - It includes the allocation of duties and work within the prison.
- **Implementation of the Prohibition of Employment as Manual Scavengers and their Rehabilitation Act, 2013:** The provisions of this Act are now binding within prisons and correctional institutions.
  - It means that manual scavenging or hazardous cleaning of sewers or septic tanks inside prisons is strictly prohibited.
- **Definition of Habitual Offenders:** The amendments address the definition of habitual offenders, ensuring that it aligns with the **Supreme Court's directives** and the existing legislation in various states.

Impact and Significance

- **Promoting Equality**: Recent amendments are a crucial step towards creating a more equitable and humane prison system in India.
  - By implementing these reforms, the government is taking concrete steps to address systemic inequalities and ensure that the principles of equality and non-discrimination are upheld within the prison system.
- **Human Rights & Social Justice:** The changes reflect a broader commitment to upholding human rights and promoting social justice within the criminal justice system.
  - By addressing caste-based discrimination, the government aims to ensure that all prisoners are treated with dignity and respect, regardless of their social background.

Source: IE

INDIA SUBMITS 4TH BIENNIAL UPDATE REPORT TO UNFCCC

In Context

- India recently submitted its **Fourth Biennial Update Report (BUR-4)** detailing its **Greenhouse Gas Emission (GHG) inventory** and the efforts it has taken to curb emissions to the **UNFCCC**.

Key Highlights of the Report

- **GHG Emission Reduction:** India's GDP emissions intensity reduced by 36% from 2005 to 2020, on track to meet the target of 45% reduction by 2030.
- **Sectoral Emissions:** Energy (75.66%), Agriculture (13.72%), Industrial Processes (8.06%), and Waste (2.56%).
- **Breakdown of GHGs**: CO_2 (80.53%), methane (13.32%), and nitrous oxide (5.13%).
- **Progress on NDC Targets:** Emission intensity of GDP was reduced by 36% from 2005 to 2020.
  - Non-fossil fuel capacity reached 46.52%, with renewable power capacity growing to 203.22 GW.
  - Additional 2.29 billion tonnes CO_2 absorbed through afforestation (2005–2021).
  - India continues to strive towards its climate goals, including the ambitious target of achieving **net-zero emissions by 2070**.

Challenges Identified

- **Financial Needs:** Enhanced funding for scaling mitigation and adaptation efforts.
- **Technology:** Advanced tools needed for renewable energy, carbon capture, and efficiency improvements.
- **Capacity Building:** Strengthened institutional frameworks and workforce skills.

What proactive steps India has taken to combat climate change?

- **Renewable Energy Expansion:** India aims to achieve **500 GW of installed renewable energy capacity by 2030**, with a focus on solar, wind, and other clean energy sources.
  - The **National Solar Mission** has significantly boosted solar power generation capacity across the country.
- **Energy Efficiency Initiatives:** Like Perform, Achieve, and Trade (PAT) scheme and UJALA Program.
- **Increasing Forest and Tree Cover:** Forest and tree cover currently stands at 25.17% of the country's total geographical area and has consistently increased.
- **Supporting Global Climate Initiatives:** International Solar Alliance (ISA), and Coalition for Disaster Resilient Infrastructure (CDRI).
- **Other National Schemes:** PM-Surya Ghar Muft Bijli Yojana, National Bio-Energy Programme, and National E-Bus Programme etc.

- **Lifestyle for Environment (LiFE) Movement:** Focuses on encouraging sustainable living practices to reduce environmental impact.

Source: IE

FERTILIZER SUBSIDY IN INDIA

Context

- The Union Cabinet has approved the proposal of the Department of Fertilizers for extension of One-time Special Package on **Di-Ammonium Phosphate (DAP) beyond the NBS subsidy @ Rs 3,500 per MT.**

What is DAP?

- **Di-ammonium Phosphate (DAP)** is a type of fertilizer that contains **phosphorus and nitrogen,** two essential nutrients for plant growth.
    - Nano DAP contains **nanoparticles of Diammonium Phosphate (DAP)** which helps in better crop growth and yield.
- DAP is commonly used in agriculture to provide a **quick and readily available source of nutrients to plants.**
- It is the **second most commonly** used fertilizer in India after urea.

Fertilizer Subsidy

- **Objectives:**
    - To make fertilizers accessible at lower prices to farmers.
    - Ensuring that the agricultural sector is adequately supported to maintain food production and national food security.
    - Fertilizers provide essential nutrients like nitrogen, phosphorus, and potassium, critical for enhancing crop yield.
- **Types of Fertilizers Subsidized:**
    - **Urea:** The most heavily subsidized fertilizer, used primarily for rice, wheat, and other cereals.
    - **Di-Ammonium Phosphate (DAP):** A key source of phosphorus and nitrogen.
    - **Muriate of Potash (MOP):** Supplies potassium to crops.
    - **Nutrient-Based Subsidy (NBS) Policy:** Under the NBS policy, subsidies are provided **based on the nutrient content of fertilizers** rather than on a per-unit basis.
        - Subsidies are provided **directly to fertilizer manufacturers or importers** based on the nutrient content (nitrogen, phosphorus, potassium, and sulfur) of the fertilizers they produce or import.

- Farmers then receive these fertilizers at **reduced prices through dealers.**
- **Mechanism of Subsidy**
    - **Subsidy on Sale Price:** The government provides financial support to fertilizer manufacturers or importers, lowering the price of fertilizers sold to farmers.
    - **Direct Benefit Transfer (DBT):** In some cases, the subsidy is transferred directly to farmers through their bank accounts to reduce intermediaries and ensure transparency.
    - **Fixed Subsidy Rates:** For urea, the subsidy is fixed per kilogram of the product, and for others like DAP, it is adjusted periodically based on market prices.

Challenges

- **Inefficiency:** The subsidy system is often seen as inefficient, as a significant portion goes to large-scale farmers or intermediaries rather than directly benefiting the target group.
- **Overuse of Fertilizers:** The heavy subsidies on fertilizers, especially urea, encourage overuse, leading to environmental issues like soil degradation and water pollution.
- **Financial Sustainability:** The growing fiscal burden of subsidies raises concerns about long-term sustainability and the need for fiscal consolidation.

Reforms and Recent Initiatives

- **Direct Benefit Transfer (DBT):** To improve targeting, the government has introduced DBT schemes in some states to directly transfer subsidy amounts to farmers.
- **Nutrient-Based Subsidy (NBS):** Introduced to promote balanced fertilizer use, it aims to reduce overreliance on urea.
- **Increased Focus on Organic Fertilizers:** The government has started promoting organic fertilizers and sustainable agricultural practices to address environmental concerns.
- **Neem-coated urea:** The government has introduced 100% Neem Coating on all subsidized agricultural grade urea in the country in order to increase the nutrient efficiency, crop yield, and soil health.
- **Soil Health Card Scheme:** The Soil Health Card Scheme aims to assess the nutrient status of soil and provide customized recommendations for nutrient management to farmers.

Way Ahead

- **Sustainability:** The government is looking at ways to make the fertilizer subsidy system more sustainable by focusing on efficient distribution,

reducing misuse, and promoting eco-friendly alternatives.

- **Balanced Fertilization:** There is an increasing emphasis on promoting a balanced nutrient management approach to reduce dependence on chemical fertilizers and improve soil health.

Source: PIB

NEWS IN SHORT

INDIA METEOROLOGICAL DEPARTMENT (IMD)

In News

- India Meteorological Department (IMD) will complete 150 years of service on January 15, 2025.

About India Meteorological Department (IMD)

- **Established:** 1875
- **Role:** National Meteorological Service of India and principal government agency for meteorology and allied subjects.
- **Parent Ministry:** Ministry of Earth Sciences, Government of India.
- **Headquarters:** New Delhi.
- **Global Role:** One of the six Regional Specialized Meteorological Centres of the World Meteorological Organization.
- **Roles and Responsibilities:** IMD provides **current and forecast meteorological information** for weather-sensitive sectors like agriculture, irrigation, shipping, aviation, and offshore oil exploration.
  - It issues **warnings for severe weather events** such as tropical cyclones, dust storms, heavy rains, snow, cold and heat waves that can cause destruction to life and property.
  - It provides **essential meteorological data** for agriculture, water resource management, industries, and oil exploration.
  - It conducts and **promotes research i**n meteorology and related disciplines.

Major Initiatives of IMD

- **National Monsoon Mission (NMM):** Improves monsoon forecasts to help agriculture, water management, and disaster planning.
- **Mausam App:** A mobile app for weather updates, forecasts, and severe weather alerts.
- **Doppler Weather Radars (DWR):** Tracks storms, rainfall, and wind patterns for accurate weather predictions.

- **Agro-Meteorological Advisory Services (AAS):** Provides weather-based advice to farmers for better crop planning.
- **System of Air Quality and Weather Forecasting (SAFAR):** Monitors air quality and weather in major cities to guide pollution management.

Source: PIB

SARASWATI RIVER

Context

- A continuous water eruption at a borewell drilling site in Jaisalmer, Rajasthan, has sparked claims of a subterranean Saraswati River beneath the desert landscape.

About the Saraswati River

- The river is mentioned over 80 times in the **Rigveda** and is believed to have dried up more than **5,000 years ago** due to climatic and tectonic shifts.
- It originated in the Himalayas and flowed through **Haryana, Rajasthan, North Gujarat, and Pakistan** before reaching the Gulf at the Western Sea, spanning approximately **4,000 km**.
- The river had **two branches—western and eastern**—that joined at Shatrana, 25 km south of Patiala.
  - The western branch, represented by the ancient Satluj, flowed through the channels of the present-day Ghaggar-Patialiwali rivulets.
  - The eastern branch, supported by the Markanda and Sarsuti rivers, is now known as the Tons-Yamuna rivers.

Source: TOI

METHYLCOBALAMIN

In News

- The **Food Safety and Standards Authority of India (FSSAI)** has provided guidelines for the use of methylcobalamin in food supplements and other products.
  - **Banned in 2016**, ban lifted in 2021, but formal notification is still pending.

Methylcobalamin

- **About:** A naturally occurring form of Vitamin B12 found in foods like fish, meat, eggs, and milk.
  - Essential for DNA synthesis, red blood cell production, and nerve function.
- **Functions:** Helps in cell multiplication, blood formation, and protein synthesis.
  - Supports the nervous system and neurological health.

- **Uses**: Treats diabetic neuropathy (nerve pain).
    - Manages anemia caused by Vitamin B12 deficiency.
    - Helps in neurological conditions like Alzheimer's disease.
- **Why It Matters:** Many Indians are deficient in B12 due to vegetarian diets.
    - Methylcobalamin is more bioavailable and effective than other forms of B12.

Source: BL

NOROVIRUS

Context

- Recently a surge in the outbreak of Norovirus has been detected in parts of the United States.

About

- **Norovirus**, often called the **stomach flu** or **stomach bug**, is a highly contagious virus causing vomiting and diarrhea.
    - It leads to inflammation in the stomach or intestines, a condition known as **acute gastroenteritis.**
- **First identified in Norwalk, Ohio**, during the **1970s**, it is a leading cause of foodborne illnesses globally.
- **The norovirus** belongs to a family of small **RNA viruses** called **Caliciviridae.**
- **Transmission:** Norovirus spreads rapidly through multiple routes; **direct contact,** by consumption of contaminated food or liquids & aerosolised particles released by an infected person.
- **Symptoms:** vomiting, diarrhea, and stomach pain and nausea.
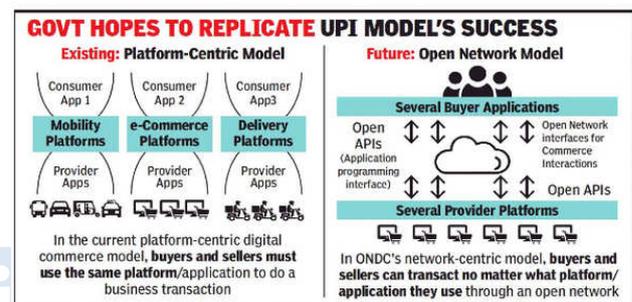
Source: HT

OPEN NETWORK FOR DIGITAL COMMERCE

Context

- The Prime Minister highlighted (Open Network for Digital Commerce) ONDC's contribution in empowering small businesses and revolutionising e-commerce.

What is the ONDC Project?

- It was launched in **2022** by the Department **of Promotion of Industry and Internal Trade (DPIIT)**, Ministry of Commerce.
- **Aim:** To **provide equal opportunities to MSMEs** to thrive in digital commerce and democratize e-commerce.
- It **promotes open networks for all aspects** of exchange of goods and services over digital or electronic networks.
    - Currently, there are partners like Paytm, Meesho, Magicpin, Mystore, Craftsvilla, and Spice Money, which act as online storefronts, allowing users to order food or any other product from a business listed on the ONDC platform.

- **How does it work?**
    - ONDC is built as a network of independent service providers, including sellers, buyers, logistics providers, and payment gateways, all connected through an open platform.
    - It uses standardized protocols for product catalogs, transactions, logistics, and payments, making it possible for users from different platforms to interact with each other.

Significance of ONDC

- **Suitable Platform for small businesses:** Small businesses would be able to use any ONDC compatible applications instead of being governed by specific platform centric policies.
    - This will provide multiple options to small businesses to be discoverable over network and conduct business.
- **Inclusivity for e-Commerce:** ONDC is expected to make e-Commerce more inclusive and accessible for consumers.
    - Consumers can potentially discover any seller, product or service, thus increasing freedom of choice for consumers.
- **Growth of startups:** By facilitating scalable and cost-effective e-commerce through the open protocol, ONDC will empower startups to grow collaboratively.

Source: PIB

PIG-BUTCHERING SCAM

In News

- According to the Union Home Ministry's latest annual report, victims are being manipulated into losing significant sums of money **"pig butchering scam" or "investment scam".**

About Pig-Butchering Scam

- The "pig butchering scam" is a type of cyber fraud that involves scammers building a long-term relationship with victims to "fatten them up" emotionally and financially before exploiting them.

- The name originates from the metaphor of fattening a pig before slaughter. It is believed to have started in China in 2016.

- The scam has led to **large-scale money laundering**. It has also been linked to cyber slavery, where individuals are forced to participate in scams under duress.

Source: TOI

PROJECT VISTAAR

In News

- The Indian Institute of Technology (IIT) Madras has partnered with the Ministry of Agriculture and Farmers' Welfare on **Project VISTAAR (Virtually Integrated System to Access Agricultural Resources).**

Project VISTAAR

- **About:** A digital platform developed to transform agricultural extension services by providing farmers with access to critical information and innovative solutions from start-ups in agriculture and allied sectors.

- **Key Features:**
    - **Enhanced Agricultural Extension Services:** Offers advisory support on crop production, marketing, value addition, and supply chain management.
    - **Integration with Agri-Startups:** Incorporates a database of over 12,000 agri-startups, enabling farmers to adopt cutting-edge technologies and solutions.
    - **Accessible and Timely Information:** Ensures farmers receive timely, contextual, and accurate information to make informed decisions.

Significance

- Digitalisation will enhance the agricultural extension system's ability to reach every farmer, ensuring they receive timely and contextual information.

- Farmers can effectively benefit from government schemes and access innovative technologies for improved agricultural practices.

- Strengthens the role of startups in bringing innovation across the agricultural value chain, from production to marketing.

Source: TH

BANANA CULTIVATION

In News

- India has seen a tenfold increase in banana exports over the past decade, aiming for $1 billion in exports within the next five years.

Banana Cultivation

- **About:** Bananas are a major horticultural crop.

- **Geographical Condition:** It evolved in the humid tropical regions of Southeast Asia, with India being one of its centers of origin.
    - Today, bananas are grown in warm tropical regions worldwide, between 30°N and 30°S of the equator. It needed deep, rich loamy soil.

- **Major varieties**: Dwarf Cavendish, Robusta, Monthan, Poovan, Nendran, etc.

- **Cultivated areas:** Andhra Pradesh, Tamil Nadu, Maharashtra, Kerala, Maharashtra, Gujarat, Telangana, and Uttar Pradesh.

- **Importance :**Bananas are a popular, nutritious fruit rich in carbohydrates, vitamins (especially B vitamins), and minerals like potassium, phosphorus, calcium, and magnesium. They are easy to digest, fat-free, and cholesterol-free.

Government Support

- Government initiatives, including financial support, modern farming techniques, and improved infrastructure, have helped transform India into a key banana exporter.

- **Uttar Pradesh** has made banana cultivation a priority under the **One District One Product (ODOP) initiative** in Kushinagar, with incentives for farmers.

Source: DD News

INJECTABLE HYDROGEL

In News

- Researchers have developed an innovative injectable **hydrogel for targeted breast cancer therapy.**

Innovative Injectable Hydrogel for Breast Cancer Therapy

- **About:** A water-based polymer network designed to release anti-cancer drugs directly and precisely at the tumor site, sparing healthy cells and minimizing systemic side effects.
- **Developed By:** Researchers at IIT Guwahati and Bose Institute Kolkata.
- **Key Features:**
  - **Precise Drug Delivery:** The hydrogel is designed for localized drug delivery directly to breast cancer tumor sites.
  - **Composition:** Made from ultra-short peptides, which are biodegradable and biocompatible components of proteins. Activated by elevated glutathione (GSH) levels, commonly found in tumor cells.
  - **Mechanism:** Remains stable at the injection site and releases the drug in a controlled manner.

Benefits Over Traditional Cancer Treatments

- **Localized Treatment:** Targets only the tumor, reducing side effects.
- **Controlled Drug Release:** Sustained drug release enhances treatment efficacy.
- **Improved Drug Uptake:** Maximizes impact on cancer cells.
- **Safety:** Minimal impact on other organs, improving the safety profile.

Source: TOI

NANO-FORMULATION OF MELATONIN SOLUTION TO PARKINSON

In News

- Researchers have shown that **nano-formulated melatonin** has improved **antioxidative and neuroprotective properties**, making it a potential therapeutic solution for **Parkinson's disease.**
  - Melatonin is a **neurohormone** secreted by the **pineal gland** in response to darkness. Regulates the sleep-wake **cycle and circadian rhythms.**

About Parkinson's Disease

- **What It Is:** A progressive neurological disorder that affects movement and body balance.
  - Causes slowed movements, tremors, and impaired motor control.
- **Causes:** Caused by degeneration of nerve cells in the substantia nigra, a brain region controlling movement.

- Loss of these cells leads to reduced production of dopamine, a neurotransmitter critical for coordinated movement.
- **Role of Mitophagy :** Parkinson's disease-related genes affect "**Mitophagy**," a process that removes dysfunctional mitochondria and reduces oxidative stress.
  - Melatonin could induce mitophagy to mitigate PD symptoms.
- **Risk Factors:** Risk increases with age; average onset is around 60 years. Studies suggest men are more likely to be affected than women.
- **Symptoms:** Tremors, rigidity, slowed movement, and impaired balance.
- Gradual worsening of motor functions over time.
- **Treatment:** While there is no cure, treatments (e.g., medications, physical therapy, and sometimes surgery) can help alleviate symptoms.

Source: PIB

IAF'S MODERNISATION PLAN

Context

- Recently, China unveiled a series of high technology platforms establishing its technological supremacy, including Defence Modernisation.

About

- China launched two stealth fighter jets, an amphibious naval ship, a scientific research ship for global deep-sea exploration, a supersonic civil jet prototype and a new bullet train dubbed the world's fastest.
- This brings focus on the Modernisation plans for the Indian Air Force.

Indian Airforce Modernisation

- The IAF is at **31 fighter squadrons** as against the sanctioned strength of 42 squadrons.
  - IAF is awaiting new inductions and with no fifth gen fighter in the line-up for at least a decade.
- India has an ambitious plan lined up for the **acquisition of over 500 fighter jets**, a bulk of them to be indigenously designed and manufactured.
  - Of these, the Light Combat Aircraft (LCA) variants will constitute the bulk.
- **Induction of Advanced Fighters:**
  - **Dassault Rafale:** A multirole fighter with advanced avionics, radar, and weaponry, boosting IAF's strike capability.

- ◆ **Su-30MKI:** A versatile, multirole fighter with advanced avionics and weapons systems, enhancing air dominance.
  - ◆ **MiG-29UPG:** Upgraded MiG-29 with enhanced radar, weapons, and engines for better combat performance.
- **Indigenous Development:** HAL Tejas, a lightweight, multirole supersonic fighter developed indigenously by HAL, replacing older MiG-21s and enhancing self-reliance.
- **Upgrades to Older Aircraft:**
  - ◆ **MiG-21 Bison & MiG-27:** Modernization programs include avionics, radar, and weapon upgrades to extend their operational life.
- **Future Plans:**
  - ◆ **Tejas Mk2:** An upgraded version of the Tejas, featuring more power, better avionics, and enhanced capabilities.
  - ◆ **Fifth-Generation Fighters:** Plans for acquiring and developing advanced fighters like the Su-57 and AMCA (Advanced Medium Combat Aircraft).

Source: TH

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