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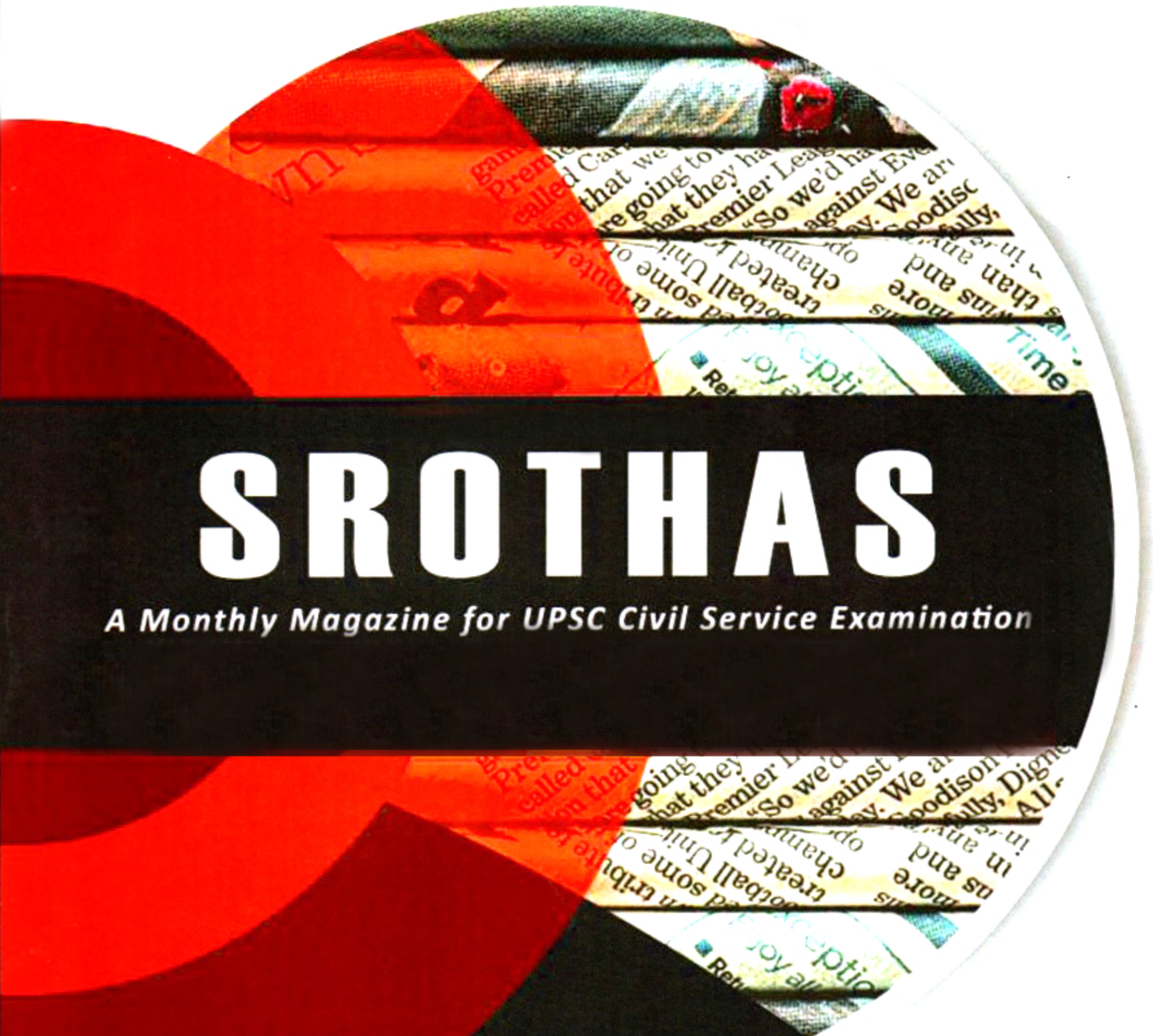

SROTHAS

A Monthly Magazine for UPSC Civil Service Examination

CURRENT AFFAIRS 2024

APRIL

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POLITY & GOVERNANCE

1. C-VIGIL APP: GENERAL ELECTIONS 2024

- C-Vigil app is a mobile application developed by the Election Commission of India (ECI) to enable citizens to report violations of the Model Code of Conduct (MCC) during elections.
- It is user-friendly and easy to operate application, which connects vigilant citizens with the District Control Room, Returning Officer and Flying Squads Teams.
- By using this app, the citizens can immediately report on incidents of political misconduct within minutes and without having to rush to the office of the returning officer.
- As soon as the complaint is sent on the cVigil app, the complainant will receive a unique ID through which the person will be able to track the complaint on their mobile.
- Users capture audios, photos or videos in real-time, and a "100-minute" countdown for time-bound response to complaints is ensured.
  - The app automatically enables a geo-tagging feature as soon as the user switches on their camera in the C-Vigil to report a violation.
  - This means that flying squads could know the precise location of a reported violation and the image captured by citizens could be used as evidence in the court of law.
  - It uses GPS to track the location of the violation.
  - It allows users to capture the live incidents only.
  - It has a feature to report the case of MCC violation anonymously.

2. DECISION SUPPORT SYSTEM: AIR QUALITY CHECK

- The Decision Support System (DSS), which identifies sources of pollution in Delhi's air, will resume functioning from Sept this year with some new features
- Decision Support System is a numerical model-based framework to forecast Delhi's air quality and sources of local and regional pollution which can impact the air. It is developed by Indian Institute of Tropical Meteorology (IITM) Pune.
- It provides quantitative information about:
  - The contribution of emissions from Delhi and the surrounding 19 districts
  - The contribution of emissions from 8 different emission sectors in Delhi
  - The contribution from biomass-burning activities in the neighbouring states
  - The effects of possible emission source-level interventions on the forecast
- The system, which works only in winter and is stopped from March to August.
- The two models — System of Air Quality and Weather Forecasting And Research (Safar) and DSS — had temporarily stopped sharing data on air pollution for the country as there were differences between their forecasts and source contribution.

3. MYCGHS APP

- The secretary of the Ministry of Health and Family Welfare launched the myCGHS app
- myCGHS app is designed to enhance access to Electronic Health Records, information and resources for Central Government Health Scheme (CGHS) beneficiaries.
- It is developed by the technical teams of the National Informatics Centre (NIC) Himachal Pradesh and NIC Health Team.
- It facilitates a wide range of services, including booking and cancellation of online appointments, downloading CGHS card and index

card, accessing lab reports from CGHS labs, checking medicine history, checking medical reimbursement claim status, accessing referral details and locating nearby wellness centers etc.

- The app features security features like 2-factor authentication and functionality of mPIN ensuring the confidentiality and integrity of users' data.

4. POSTAL BALLOT

- The Election Commission has notified the facility of voting through postal ballot for polling personnel engaged in election duty.
- Postal ballot is also known as absentee voting, is a method of voting in which electors cast their ballots by mail rather than in person at a polling station.
- Members of the armed forces, paramilitary forces and other government employees deployed on election duty far from their home constituencies.
- Government officials and polling staff who are assigned duties at polling stations other than their own.
- Individuals who are detained under preventive custody orders during the election period.
- To apply for a postal ballot, eligible voters must submit an application to the Returning Officer (RO) of their respective constituency.
- The RO verifies the eligibility of the applicant and issues the postal ballot if the criteria are met.

5. GREEN ELECTIONS

- The Election Commission of India (ECI) has expressed its apprehension regarding the environmental hazards linked with the utilization of non-biodegradable materials in elections.
- Amidst the climate crisis, shifting to sustainable practices across every sphere of human activity has become inevitable and urgent.
- Green Elections are practices that aim to reduce the environmental impact of electoral processes.
- Such practices encompass utilizing recycled materials, advocating for electronic voting, and urging candidates to embrace sustainable campaign methods.
- Candidates and parties can adopt sustainable alternatives such as recycled paper, biodegradable banners, and reusable materials.
- Opting for energy-efficient lighting, sound systems, and transportation during rallies can help reduce the carbon footprint.
- Utilizing digital platforms for campaigning purposes (such as websites, social media, and email) diminishes paper consumption and energy usage.

6. SUVIDHA PORTAL

- The Election Commission recently said its Suvidha portal has received over 73,000 applications since the Lok Sabha polls were announced.
- Suvidha Portal is developed by the Election Commission of India (ECI) to ensure a level playing field upholding the democratic principles of free, fair and transparent elections.
- It streamlined the process of obtaining and acting upon requests for permissions and facilities from political parties and candidates during the election period.
- It caters to a diverse range of permission requests transparently on the First in First Out principle.
- Political parties and candidates can seamlessly submit permission requests online from anywhere, at any time.
- Offline submission options are available.
- It caters to permissions for organising rallies, opening temporary party offices, door-to-door canvassing, video vans, helicopters, obtaining vehicle permits, distributing pamphlets.
- It is supported by a robust IT platform, managed by nodal officers across various state departments.
- It also has a companion app that enables applicants to track the status of their requests in real time.
- Furthermore, the permission data available on the portal serves as a valuable resource for scrutinising election expenditures, contributing to greater accountability and integrity in the electoral process.

7. RIGHT AGAINST ADVERSE EFFECTS OF CLIMATE CHANGE

- The Supreme Court of India recognized the right against adverse effects of climate change as a fundamental right within the ambit of Articles 14 (right to equality) and 21 (right to life) of the Indian Constitution.
- The Supreme Court's observation came while delivering a judgment in a case related to the protection of endangered bird species, the Great Indian Bustard and the Lesser Florican, in Gujarat and Rajasthan.
- The case dealt with the impact of overhead power transmission lines on the habitats and flight paths of these birds.
- The Supreme Court stated that the right against the adverse effects of climate change, although not explicitly articulated, is inherently linked to the right to a clean environment, which is recognized as a fundamental right under Articles 14 and 21 of the Constitution.
- The court emphasized that as the impact of climate change intensifies year by year, it becomes necessary to recognize this right distinctly.
- The judgment noted that violations of the right to a healthy environment due to climate change can have ramifications across numerous rights domains, such as the right to life, personal integrity, health, water, housing, and procedural rights like information, expression, association, and participation.

8. MID-DAY MEAL SCHEME AND DIGITAL INCLUSION: INDONESIAN DELEGATION VISITS INDIA

- An Indonesian delegation led by Mochammad Firman Hidayat, Deputy Coordinating Minister of Maritime Resources, Coordinating Ministry of Maritime Affairs and Investment, visited India last week to explore collaboration in various sectors and learn from India's best practices in the mid-day meal scheme and digital inclusion.
- Indonesia's President Prabowo has proposed implementing a mid-day meal scheme in schools, similar to India's program, as part of his election manifesto.
- The Indonesian delegation's visit to India aimed to gather insights and knowledge to make their domestic mid-day meal plan a success.
- They also sought to learn from India's experiences in digital inclusion and connectivity, which are among the top domestic priorities of the Indonesian government.
- The delegation interacted with officials from the Ministry of Education, gaining insights into the scheme's implementation, logistics, nutritional value, challenges, and the roles of central and state governments.

9. VOTER VERIFIED PAPER AUDIT TRAIL (VVPAT)

- The Supreme Court announced that it would soon address petitions for 100% verification of Voter Verified Paper Audit Trail (VVPAT) slips, just ahead of the first phase of voting on 19th April 2024.
- The VVPAT machine is attached to the ballot unit of the Electronic Voting Machine (EVM), and provides visual verification for the vote cast by a voter by printing a slip of paper with the voter's choice on it.
- The slip of paper with the candidate's details is briefly displayed for verification behind a

glass window, giving the voter 7 seconds, before dropping into a compartment below.
- Voters are not allowed to take the VVPAT slip home as it is used to verify votes in five randomly selected polling booths.
- The concept aims to enhance trust in the voting process by enabling physical verification of electronically cast votes, reassuring both voters and political parties about the accuracy of their votes.
- The concept of the VVPAT machine was initially proposed in 2010 during a meeting between the Election Commission of India (ECI) and political parties to enhance transparency in the EVM-based polling process.

- Following prototype preparation, field trials were conducted in Ladakh, Thiruvananthapuram, Cherrapunjee, East Delhi, and Jaisalmer in July 2011.
- It led to the approval of VVPAT by an expert committee of the ECI in February 2013.

10. OVERSEAS CITIZENSHIP OF INDIA: EXPANSION

- India has been contemplating extending the Overseas Citizenship of India (OCI) Card privileges to overseas Indians in Fiji and other nations after relaxing the rules for Suriname.
- In 2023, India announced an extension of the eligibility criteria for OCI card of the original Indian immigrants in Suriname, from the fourth generation to the sixth generation.
- Overseas Citizenship of India (OCI) Card: The concept of OCI was introduced in response to demands for dual citizenship by the Indian diaspora, particularly in developed countries.
- The Ministry of Home Affairs defines an OCI as a person who:
  - Was a citizen of India on or after 26th January 1950; or
  - Was eligible to become a citizen of India on 26th January 1950; or
- Is a child or grandchild of such a person, among other eligibility criteria?
  - According to Section 7A of the OCI card rules, an applicant is not eligible for the OCI card if he, his parents, or grandparents have ever been a citizen of Pakistan or Bangladesh.
- The category was introduced by the government in 2005.
- The Government of India via the Citizenship (Amendment) Act, 2015 merged the Person of Indian Origin (PIO) category with the OCI category in 2015.

11. HOME VOTING: ECI

- The Election Commission of India (ECI) has introduced a ground-breaking initiative for the 2024 Lok Sabha elections, providing the option of home voting for elderly citizens above 85 years of age and Persons with Disabilities (PwDs) with a 40% benchmark disability.
- This initiative aims to enhance inclusivity and accessibility in the electoral process.
- Additional steps taken by the Election Commission (EC) to promote inclusive voting include:
  - Abolishing Form-M requirement for Kashmiri migrants residing in Jammu and Udhampur, simplifying the voting process for them.
  - Implementing Systematic Voter's Education and Electoral Participation (SVEEP) to engage Persons with Disabilities (PwDs) and educate their friends, families, and polling officials.
  - Introducing the proposed Multi-Constituency Remote Electronic Voting Machine (RVM), enabling migrant voters to vote from their current place of residence.
  - Allowing voting by postal ballot for special voters, service voters (including members of the armed forces, police forces serving outside their states, and government employees serving outside India), voters on election duty, and electors subjected to preventive detention.
  - Facilitating proxy voting, allowing registered electors, particularly service voters, to delegate their voting rights to a representative of their choice.

12. EASEMENTARY RIGHT

- The Supreme Court, in a dispute of easementary rights over a road, reiterated that the power of attorney holder can only depose about the facts within his personal knowledge.
- Easementary Right concept of easement has been defined under The Indian Easements Act, 1882.
- According to it, an easementary right is a right possessed by the owner or occupier of the land on some other land, not his own, the purpose of which is to provide the beneficial enjoyment of the land.
- This right is granted because, without the existence of this right an occupier or owner cannot fully enjoy his own property.
- It includes the right to do something or to prevent or to continue to prevent something in connection with or in respect of some other land, which is not his own, for the enjoyment of his own land.

- The word 'land' refers to everything permanently attached to the earth and the word 'beneficial enjoyment' denotes convenience, advantage or any amenity or any necessity.
- The owner or occupier referred to in the provision is known as the Dominant Owner and the land for the benefit of which the easementary right exists is called Dominant Heritage.
- Whereas the owner upon whose land liability is imposed is known as the Serviant Owner and the land on which such a liability is imposed to do or prevent something is known as the Servient Heritage.

13. NATIONAL PANCHAYATI RAJ DAY 2024

- The National Colloquium on "Governance at the Grassroots after Three Decades of the 73rd Constitutional Amendment" was inaugurated in New Delhi to mark National Panchayati Raj Day 2024.
- The event will honour the best panchayats with awards for their efforts in improving the lives of rural households.
- The Ministry of Panchayati Raj in India observes 24th April as National Panchayati Raj Day each year.
- The 73rd Amendment Act of 1992 which gave constitutional status to Panchayati Raj Institutions (PRIs) and improved local self-governance in India was enacted on this day.
- India's three-tiered (Gram Panchayat, Panchayat Samiti and Zila Parishad) administrative structure is known as the Panchayati Raj system, it aims to bring about improvement at the grassroots level in rural areas.
- It is important for achieving inclusive growth and addressing issues like climate change and rural-to-urban migration

E C O N O M Y

1. DIGITAL INDIA TRUST AGENCY (DIGITA): RBI

- The Reserve Bank of India (RBI) is considering establishing a Digital India Trust Agency (DIGITA) to combat the proliferation of illegal lending apps and curb growing cyber fraud.
- This proposed agency aims to verify digital lending apps, maintain a public register of verified apps, and promote transparency and accountability within the digital lending sector.
- In recent years, India has witnessed a surge in fraudulent activities and unethical practices in the digital lending sector.
- The RBI has taken various measures to address this issue, including collaborating with the IT Ministry and Google to whitelist legitimate digital lending apps and remove unauthorised ones from the Google Play Store.
- Once established, DIGITA would be responsible for the following:
  - Verification of digital lending apps
  - The agency would maintain a public register of verified digital lending apps, making it easier for consumers to identify legitimate apps.
  - Apps lacking the verified mark from DIGITA would be considered unauthorised for law enforcement purposes, serving as a crucial checkpoint in combating financial crimes in the digital domain.

2. INDIA EMPLOYMENT REPORT 2024

- The India Employment Report 2024, prepared jointly by the Human Development and the International Labour Organization, was released recently.
- Basic long-term feature of the employment situation in the country continues to be insufficient growth of the non-farm sectors and the ability of these sectors to absorb workers from agriculture.
- India's working-age population (aged 15–59) increased from 61% in 2011 to 64% in 2021 and is projected to reach 65% in 2036.
- About 7-8 million young people are added each year to the labour force.
- Unemployment in the country is "predominantly a problem among youth", especially those with a secondary level of education or higher, and that it has intensified over time.
- Also, among the educated (secondary level or higher) unemployed youth, women accounted for a larger share (76.7%) than men (62.2%).
- There is a significant gender gap in the labour market, with low rates of female labour force participation. The gender gap in the LFPR has remained almost consistent over the past two decades.
- In 2022, the LFPR of young men (at 61.2%) was almost three times higher than that of young women (at 21.7%), and the gender gap was similar in both rural and urban areas.
- The ILO and IHD stated that the jobs remained low-productive and low-earning. Real wages and earnings showed a decline or had stagnated.
- While India's large young workforce is a demographic dividend, the report noted that they don't appear to have the skills to deliver with 75% of youth unable to send emails with attachments, 60% unable to copy and paste files, and 90% unable to put a mathematical formula into a spreadsheet.

3. LARGE VALUE FUND (LVF) SCHEME

- The Competition Commission of India (CCI) has approved the acquisition of shares of MG Motor India Private Limited by IndoEdge India Fund under the Large Value Fund (LVF) Scheme.
- **Large Value Fund (LVF) Scheme**: It is an Alternative Investment Fund (AIF) wherein every investor is an accredited investor and invests a minimum amount of Rs 70 crore.
- **Alternative Investment Fund (AIF):** An AIF is a privately pooled or collective investment fund incorporated in India for investment purposes.
- SEBI categorizes AIFs into 3 types:
- Category-1 AIFs:

- Invest in startups, Small and Medium-sized Enterprises (SMEs), and socially beneficial sectors like infrastructure.
- Includes Infrastructure Funds, Venture Capital Funds, Angel Funds, and Social Venture Funds.

- Category-2 AIFs:
  - Invest in equities and debt securities, excluding Category 1 or 3.
  - Includes Fund of Funds, Debt Funds, and Private Equity Funds.
- Category-3 AIFs:
  - Aim for short-term investment returns, utilizing complex trading strategies.
  - Includes Hedge Funds and Private Investment in Public Equity Funds.

4. MARINE PRODUCTS EXPORT DEVELOPMENT AUTHORITY

- Officials asserted that the entire value chain for India's shrimp exports is certified by the Marine Products Export Development Authority (MPEDA) and there is no scope for abusive conditions at shrimp farms.
- Marine Products Export Development Authority is a statutory body entrusted with the primary task of promotion of export of marine products.
- The erstwhile Marine Products Export Promotion Council established by the Government of India in September, 1961 was converted into MPEDA on 24th August, 1972.
- Developing and regulating off-shore and deep-sea fishing and undertaking measures for the conservation and management of off-shore and deep-sea fisheries;
- Registering fishing vessels, processing plants or storage premises for marine products and conveyances used for the transport of marine products; fixing of standards and specifications for marine products for purposes of export;
- Regulating the export of marine products; registering of exporters of marine products on payment of such fees as may be prescribed;

5. GREEN STEEL POLICY

- The Steel Ministry is developing a comprehensive green steel policy, encompassing the manufacturing process, required skill set, and funding support, as part of a complete decarbonization strategy.
- Green steel is the eco-friendly production of steel with lower greenhouse gas emissions, possibly reducing costs and enhancing quality compared to traditional methods.
- The steel manufacturing process, involving blast furnaces, basic oxygen furnaces, and electric arc furnaces, is a major global source of carbon emissions, primarily due to the high coal and coke consumption in blast furnace operations.
- A study suggests that with steel demand projected to rise through the 21st century, there is a strong incentive to seek low greenhouse gas (GHG) emission alternatives for steel production.
- India's domestic steel sector contributes 12% of the country's greenhouse gas emissions, with an emission intensity of 2.55 tonnes of CO2 per tonne of crude steel, higher than the global average of 1.9 tonnes of CO2.

6. MANUFACTURING PURCHASING MANAGERS INDEX

- According to a survey released by Hong Kong and Shanghai Banking Corporation Limited (HSBC), India's Manufacturing Purchasing Managers' Index (PMI) reached a 16-year peak of 59.1 in March 2024.
- PMI is an economic indicator, which is derived after monthly surveys of different companies.
- It shows trends in both the manufacturing and services sector.
- A PMI above 50 represents an expansion when compared with the previous month.
- It helps in determining whether the market conditions, as seen by purchasing managers, is expanding, contracting or staying the same.
- It is used to provide information regarding the current and future business conditions.
- The HSBC India Manufacturing PMI is compiled by S&P Global.

7. INDIA'S STOCK MARKET

- India's stock market capitalization is currently the fifth largest globally at $4.5 trillion, according to a report titled 'Recap 2024. Crystal Gaze 2025' by financial conglomerate Pantomath Group.

- The report predicts that India's market cap is likely to hit $10 trillion by 2030, driven by strong economic growth and favorable government policies.
- This would make India the third-largest economy in the world by 2027.
- As of 2024, the top five countries by market capitalization are:
  - United States: $44.7 trillion
  - China: $9.8 trillion
  - Japan: $6 trillion
  - Hong Kong: $4.8 trillion
  - India: $4.5 trillion
- In the fiscal year 2023-24, the Indian equity market witnessed a phenomenal performance, with benchmark indices soaring to unprecedented all-time highs:
  - Nifty: Scaled a milestone of 22,526.60
  - Sensex: Reached a peak of 74,245.17
  - NSE Midcap 100: Advanced around 60.06%
  - NSE Smallcap 250: Advanced around 63.07%
- India emerged as one of the best-performing markets in the last four years, ending a time-wise correction in March 2023 and continuing its strong momentum.

8. POLICY RATES UNCHANGED 2024

- The Monetary Policy Committee (MPC) of the Reserve Bank of India (RBI), which met recently, decided to keep the repo rate – the main policy rate – unchanged at 6.5 per cent and maintain the policy stance of 'withdrawal of accommodation'
- Both the decisions were taken in a majority 5:1 voting by the six-member MPC, headed by RBI Governor Shaktikanta Das.
- The repo rate is the rate at which the RBI lends money to commercial banks in the event of any shortfall of funds. It is used by the RBI to control inflation.
- The current repo rate of 6.5% is the highest since August 2018, when it was at 6.5%.
- The RBI has raised the repo rate by a cumulative 250 basis points since May 2022 in the fight against inflation.

9. EXCHANGE TRADED CURRENCY DERIVATIVES: RBI

- The Reserve Bank of India (RBI) has postponed the implementation of its new norms for the exchange-traded currency derivatives (ETCD) market.
- This decision follows concerns raised by market participants regarding participation in the ETCD market, which led to increased volatility in the forex market.
- The new norms, aimed to allow users to take positions in the foreign exchange derivatives market without needing to establish the existence of underlying exposure, up to a single limit of $100 million equivalent across all currency pairs involving the rupee.
- However, the RBI emphasized that the regulatory framework for ETCDs remains consistent, guided by the Foreign Exchange Management Act (FEMA), 1999.
- Users are required to ensure compliance with the requirement of having underlying exposure, and the limit for taking positions was subsequently amended to a single limit of $100 million combined across all exchanges.

10. FUNDING WINTER

- Investments from large foreign investors fell by as much as 80 per cent on average in 2023, amid the Indian start up ecosystem's so-called funding winter.
- Funding winter refers to a period of market correction in capital inflow, which lowers the probability of start-ups getting higher valuations in the short to mid-term.
- Simply put, founders find it difficult to raise funding and achieve sky-high valuations.
- It often leads to investors avoiding firms without a set path chalked out for profitability.

  This, in turn, prompts a need to correct the value of the start-up.
- Further, one of the prominent effects of funding winter is that it requires business owners to reset their priorities in terms of profit maximization.
- With the funding winter in place, start-ups resort to measures which help them save their working capital, as the expectations of funding from investors are minimal.

- The advertisement expenses, capital expenditures and expansion plans are put to a halt in order to increase the sustainability of the firm.
- Only the expenditure essential to the survival of the firm is undertaken and all possible steps are put in place to ensure unnecessary expenses.
- Funding winter is not a new concept but a cyclical effect that happens due to multiple factors which impact the free flow of investments in the market.
- These factors may either be generically applicable to the entire market, such as geopolitical unrest in countries, monetary policies or financial irregularities or may be centric to the relevant sectors.
- The duration of a funding winter is unpredictable, and it may last for a long time depending on the multiple factors acting upon it.

11. NEW FEATURES FOR THE UNIFIED PAYMENTS INTERFACE

- The Reserve Bank of India (RBI) has recently introduced two new features for the Unified Payments Interface (UPI).
- New Features:
  - UPI Access for Prepaid Payment Instruments (PPIs) through Third Party Apps: Previously, UPI payments from Prepaid Payment Instruments (PPIs) could only be made using the web or mobile app provided by the PPI issuer. Now, RBI proposes to permit the use of third-party UPI apps for making UPI payments from PPI wallets.
  - Enabling UPI for Cash Deposit Facility: Traditionally, depositing cash at Cash Deposit Machines (CDMs) primarily required the use of debit cards.
  - Building on the success of card-less cash withdrawal using UPI at ATMs, RBI now proposes to facilitate cash deposits in CDMs using UPI.
  - This measure aims to enhance customer convenience and streamline the currency handling process at banks.
  - Soon, customers will be able to deposit cash at CDMs in banks and ATMs through the UPI app.
- **Unified Payments Interface (UPI):**
- The Unified Payments Interface (UPI) is a real-time payment system that allows instant transfer of funds between two bank accounts through a mobile platform.
- It was developed by the National Payments Corporation of India (NPCI) and is regulated by the Reserve Bank of India (RBI).

12. CREDIT-DEPOSIT RATIO: REACHED ITS HIGHEST LEVEL

- Data from the Reserve Bank of India (RBI) reveals that the credit-deposit ratio has reached its highest level in at least 20 years.
- This surge in the credit-deposit ratio indicates that more of the banks' deposit base is being utilized for loans, including home loans and other consumption-related loans.
- The credit-deposit ratio is a financial metric that measures the proportion of a bank's deposit base that is used for lending.
- It is calculated by dividing the total loans extended by the bank by its total deposits.
- A higher ratio indicates that a larger portion of the bank's deposits is being lent out as credit, while a lower ratio suggests more deposits are being held in reserve or invested in other assets.
- If a bank has a credit-deposit ratio of 80%, it means that 80% of its deposits are being used to provide loans.
- This ratio is crucial for assessing a bank's liquidity and lending capacity.

13. IMPORTED INFLATION: ADB WARNING

- The Asian Development Bank recently warned that India could face imported inflation as the rupee could depreciate amid the rise in interest rates in the West.
- Imported Inflation is a general and sustainable price increase due to an increase in the costs of imported products.
- This price increase concerns the price of raw materials and all imported products or services used by companies in a country.
- It is also referred to as cost inflation.

- Several factors cause imported inflation:
  - The more the currency depreciates on the foreign exchange market, the higher the price of imports. Effectively, more money is needed to buy goods and services outside the country.
  - When commodity prices rise globally, it directly impacts the cost of imports and can lead to higher inflation in the importing country.
  - Changes in trade policies, such as tariffs and quotas, can influence the cost of imported goods.
  - Fluctuations in transportation costs, influenced by factors like fuel prices and logistical challenges, can affect the final cost of imported goods.
  - With imported inflation, production costs are higher for companies. These companies most often reflect this increase in the selling price of the goods and services sold. As a result, prices within the country rise.

14. SPECIAL RUPEE VOSTRO ACCOUNT

- The Indian government has simplified the payment mechanism for traders importing pulses from Myanmar by implementing the Rupee/Kyat direct payment system through the Special Rupee Vostro Account (SRVA) via Punjab National Bank.
- This move aims to streamline trade transactions and enhance efficiency.
- India heavily relies on imports of pulses, including tur and urad dals, from Myanmar to meet domestic demand.
- Special Rupee Vostro Account (SRVA) is an account that domestic banks hold for foreign banks in the former's domestic currency, which, in this case, is the Indian Rupee (INR).
- It allows domestic banks to provide international banking services to their clients who have global banking needs without physically being present abroad.
- The Reserve Bank of India (RBI) introduced the SRVA mechanism to settle international transactions in rupees.

15. ASSET RECONSTRUCTION COMPANIES: RBI

- The Reserve Bank of India (RBI) recently released a master direction for Asset Reconstruction Companies (ARCs).
- Asset Reconstruction Companies (ARCs) is a specialized financial institution that purchases the bad debts of a bank at a mutually agreed value and attempts to recover those debts or associated securities by itself.
- They are registered under the RBI and regulated under the Securitisation and Reconstruction of Financial Assets and Enforcement of Securities Interest Act, 2002 (SARFAESI Act, 2002).
- They function under the supervision and control of the RBI.
- As per the RBI, ARC performs the functions namely Acquisition of financial assets, Change or takeover of Management or Sale or Lease of Business of the Borrower, Rescheduling of Debts, Enforcement of Security Interest and Settlement of dues payable by the borrower.
- They take over a portion of the bank's debts, which qualify as Non-Performing Assets (NPAs).
- Therefore, ARCs are involved in the business of asset reconstruction, securitisation, or both. All the rights previously held by the lender (the bank) in regard to the debt are transferred to the ARC.
- The required funds to purchase such debts can be raised from Qualified Buyers.
- Qualified Buyers include Financial Institutions, Insurance companies, Banks, State Financial Corporations, State Industrial Development Corporations, trustee or ARCs registered under SARFAESI and Asset Management Companies registered under SEBI that invest on behalf of mutual funds, pension funds, FIIs, etc.
- The Qualified Buyers are the only persons from whom the ARC can raise funds.

ENVIRONMENT

1. INDIA'S FIRST SMALL-SCALE LIQUEFIED NATURAL GAS (SSLNG) UNIT

- The Union Minister for Petroleum and Natural Gas recently inaugurated India's first small-scale liquefied natural gas (SSLNG) unit at GAIL (India) Ltd's Vijaipur complex in Madhya Pradesh.
- This development is part of the government's broader initiative to promote the use of natural gas in various sectors and increase its share in the country's primary energy mix to 15% by 2030.
- SSLNG involves liquefying and transporting natural gas on a smaller scale, catering to areas without pipeline connections using specialised trucks and vessels.
- Starting from large-scale LNG import terminals, SSLNG can supply LNG directly to consumers via cryogenic road tankers or small vessels, either as a liquid or regasified for traditional uses.
- It will lead to reduced dependency on costly gas imports, especially if it replaces a significant portion of diesel consumption, leading to substantial foreign exchange savings.
- It also promotes cleaner energy and supports India's transition towards sustainable fuel sources.
    - LNG is increasingly used as a fuel for ships and vessels, especially in emission-controlled areas, due to its lower emissions of sulphur oxides (SOx) and particulate matter compared to traditional marine fuels.

2. UNESCO GLOBAL GEOPARKS NETWORK

- The UNESCO's Executive Board has endorsed the addition of 18 sites to the UNESCO Global Geoparks network.
- UNESCO Global Geoparks Network is single, unified geographical areas where sites and landscapes of international geological significance are managed with a holistic concept of protection, education and sustainable development.
- The UNESCO Global Geopark designation was created in 2015 and recognizes "geological heritage of international significance".
- The establishment of a UNESCO Global Geopark is a bottom-up process involving a strong local multiple partnership with long-term public and political support.
- It is not a formal legislative designation, though the defining geological heritage sites within a UNESCO Global Geopark must be protected under indigenous, local, regional or national legislation as appropriate.
- This status does not imply restrictions on any economic activity inside a UNESCO Global Geopark where that activity complies with indigenous, local, regional and/or national legislation.
- A UNESCO Global Geopark is given this designation for a period of four years after which the functioning of the site re-examined during a revalidation process.
- The selling or destruction of the geological value of a UNESCO Global Geopark or of material either from within the Geopark or from anywhere else in the world is not permitted.

3. NITROGEN-FIXING BACTERIA

- Researchers have discovered nitrogen-fixing symbiotic organisms exhibiting behaviours similar to organelles.

- Nitrogen-fixing bacteria are prokaryotic microorganisms that are capable of transforming nitrogen gas from the atmosphere into "fixed nitrogen" compounds, such as ammonia, that are usable by plants.

- There are two main types of nitrogen-fixing bacteria.
- Symbiotic or mutualistic: These species live in root nodules of certain plants. Plants of the pea family, known as legumes which are some of the most important hosts for nitrogen-fixing bacteria. Examples: Rhizobium, which is associated with plants in the pea family and various Azospirillum species, which are associated with cereal grasses.
- Other nitrogen-fixing bacteria are free-living and do not require a host. They are commonly found in soil or in aquatic environments. Examples: Cyanobacteria Anabaena and Nostoc and genera such as Azotobacter, Beijerinckia and Clostridium.
- Nitrogen is abundant in the atmosphere; most organisms cannot use it in that form.
- Nitrogen-fixing bacteria accomplish more than 90 percent of all nitrogen fixation and thus play an important role in the nitrogen cycle.

4. LANDSCAPE ECOLOGY IN ELEPHANT CORRIDORS

- Landscape ecology has become crucial for identifying and restoring elephant corridors effectively, rather than relying solely on expert field knowledge.
- Landscape ecology is the study of the interactions between the temporal (time-related) and spatial (space-related) aspects of a landscape and the organisms within it.
- Landscape ecology became more accurate with the advancements in detecting core areas and corridors are now based on three factors: intensive use of field data; improvement in GIS (Geographic Information Systems) and availability of geospatial data and adapted algorithm.
- Elephant Corridors are strips of land that enable elephant movement between two or more friendly habitats.
- The key findings of the Elephant Corridors of India, 2023 Report are as follows:
  - The report highlighted a surge of 62 new corridors, marking a 40% increase since 2010, now totalling 150 corridors across the nation.
  - West Bengal has the highest number of elephant corridors, totalling 26, constituting 17% of the total corridors.
  - The East central region contributes 35% (52 corridors), and the North East region follows as the second-largest with 32% (48 corridors).
  - Southern India registered 32 elephant corridors, representing 21% of the total, while northern India has the lowest count of 18 corridors, amounting to 12%.
  - Elephants have expanded their ranges in the Vidarbha region of Maharashtra and southern Maharashtra bordering Karnataka.

5. GLOBAL FOREST WATCH: REPORT

- India has lost 2.33 million hectares of tree cover since 2000, according to the latest data from the Global Forest Watch monitoring project.
- Global Forest Watch (GFW) is an open-source web application to monitor global forests in near real-time using satellite data and other sources.
- It is a project of the Washington based non-profit research organization, the World Resources Institute (WRI).

Highlights of the GFW's annual forest loss data

- The loss of primary forests–those untouched by people and sometimes known as old-growth forests – in the tropics declined 9% last year compared to 2022.
- The world last year lost about 37,000 square kilometers (14,000 square miles) of tropical primary forest, an area nearly as big as Switzerland.
- Brazil, the Democratic Republic of Congo, and Bolivia topped the ranking of tropical countries with the most primary forest losses.
- Deforestation globally rose by 3.2% in 2023.
- India has lost 2.33 million hectares of tree cover since 2000, equivalent to a six percent decrease in tree cover during this period.
- The country lost 4,14,000 hectares of humid primary forest (4.1 percent) from 2002 to 2023, making up 18 per cent of its total tree cover loss in the same period.
- Between 2001 and 2022, forests in India emitted 51 million tons of carbon dioxide

equivalent a year and removed 141 million tons of carbon dioxide equivalent a year. This represents a net carbon sink of 89.9 million tons of carbon dioxide equivalent a year.

- An average of 51.0 million tons of carbon dioxide equivalent per year was released into the atmosphere as a result of tree cover loss in India.
- The data showed that 95 percent of the tree cover loss in India from 2013 to 2023 occurred within natural forests.
- The GFW data showed that five states accounted for 60 percent of all tree cover losses between 2001 and 2023.
- Assam had the maximum tree cover loss at 324,000 hectares, compared to an average of 66,600 hectares.
- Mizoram lost 312,000 hectares of tree cover, Arunachal Pradesh 262,000 hectares, Nagaland 259,000 hectares, and Manipur 240,000 hectares.

6. GREEN CREDIT PROGRAM

- The Ministry of Environment Forest and Climate Change (MoEFCC) has clarified that under the Green Credit Program (GCP) primacy must be accorded to restoring ecosystems over merely tree planting.

- Green Credit Program (GCP) is an innovative market-based mechanism designed to incentivize voluntary environmental actions across diverse sectors, by various stakeholders like individuals, communities, private sector industries, and companies.
- It is designed to foster a sustainable lifestyle and environmental conservation as part of the 'LiFE' initiative announced by the Prime Minister in United Nations Climate Change Conference of the Parties (COP26).
- The Green Credit program encompasses eight key types of activities aimed at enhancing environmental sustainability:
  - Planting trees to increase green cover and combat deforestation.
  - Implementing strategies to efficiently manage and conserve water resources.
  - Promoting eco-friendly and sustainable agricultural practices.
  - Implementing effective waste management systems to reduce environmental pollution.
  - Initiatives aimed at reducing air pollution and improving air quality.
  - Protecting and restoring mangrove ecosystems for ecological balance.
- The operational framework of the Green Credit Programme involves a process where both individuals and corporations are given the opportunity to contribute financially to the restoration efforts of forests deemed 'degraded'.
- This is facilitated through applications to the Indian Council of Forestry Research and Education (ICFRE), an independent entity under the Environment Ministry.
- The ICFRE is responsible for overseeing the financial contributions directed towards forest restoration, which is then executed by the respective State forest departments.
- The activities will then be subject to verification by a designated agency. Based on the agency's report, the administrator will grant the applicant a certificate of Green Credit.
- The calculation of Green Credit is determined by factors such as resource requirements, scale, scope, size, and other relevant parameters necessary to achieve the desired environmental outcomes.
- A critical component of the program is the establishment of a Green Credit Registry, which will help track and manage earned credits.
- The administrator will create and maintain a trading platform, enabling the trading of Green Credits on a domestic market.

7. GLOBAL MASS CORAL BLEACHING

- The US National Oceanic and Atmospheric Administration (NOAA) said the fourth global mass coral bleaching event has been triggered by extraordinary ocean temperatures.
- Corals are essentially animals, which are sessile, meaning they permanently attach themselves to the ocean floor.

- They share a symbiotic relationship with single-celled algae called zooxanthellae.
- The algae provides the coral with food and nutrients, which they make through photosynthesis, using the sun's light.
- They use their tiny tentacle-like hands to catch food from the water and sweep into their mouth.
- Each individual coral animal is known as a polyp and it lives in groups of hundreds to thousands of genetically identical polyps that form a 'colony'.
- Corals are largely classified as either hard coral or soft coral.
- It is the hard corals that are the architects of coral reefs — complex three-dimensional structures built up over thousands of years.
- Hard corals have stony skeletons made out of limestone that are produced by coral polyps.
- When polyps die, their skeletons are left behind and used as foundations for new polyps.
- Coral reefs, also referred to as "rainforests of the sea", have existed on the Earth for nearly 450 million years.
- Coral reefs have a crucial role in marine ecosystems.
- Thousands of marine species can be found living on one reef.
- Coral Bleaching happens when corals experience stress in their environment due to changes in temperature, pollution or high levels of ocean acidity.
- Under stressed conditions, the zooxanthellae or food-producing algae living inside coral polyps start producing reactive oxygen species, which are not beneficial to the corals.

8. GANDHI SAGAR WILDLIFE SANCTUARY: SOUTH AFRICA DELEGATION VISIT

- South African delegation recently visited the Gandhi Sagar Wildlife Sanctuary in Madhya Pradesh to assess its readiness for the release of five to eight cheetahs later this year.
- This visit is part of the planning for Project Cheetah, which aims to reintroduce cheetahs into the sanctuary.
- The focus is on breeding and favourable weather conditions.
- The Gandhi Sagar Wildlife Sanctuary is situated on the northern boundary of Mandsaur and Nimach districts in Madhya Pradesh.
- It shares its border with the state of Rajasthan.
- Much of the sanctuary consists of vast open landscapes with sparse vegetation and rocky terrain, interspersed with small patches of dense forests.
- The Chambal River flows through the sanctuary, dividing it into two parts.
- The forest of this sanctuary is part of Khathiar-Gir dry deciduous forest thus here we will find trees like Salai, Kardhai, Dhawda, Tendu, Palash etc.
- The sanctuary is home to various wildlife species. Some of the easily sighted animals include chinkara (Indian gazelle), Nilgai, and sambar.
- The Indian leopard, langur, Indian wild dog, peacock, otter, and Mugger crocodile inhabit the region.
- World famous Chaturbhuj Nala rock shelters are also part of the same Gandhi Sagar wildlife sanctuary.
- Gandhi Sagar Wildlife Sanctuary in Madhya Pradesh, India, is being prepared as a second home for cheetahs as part of the Cheetah Reintroduction Project.

INTERNATIONAL RELATIONS

1. GROUP OF FRIENDS

- India, leading the Group of Friends (GOF) comprising 40 member states, convened a meeting to discuss strategies for strengthening legal frameworks against crimes targeting peacekeepers.
- India launched a new database hosted on the Unite Aware platform to record crimes against peacekeepers and monitor accountability efforts.
- The database will serve as an online repository to monitor and address cases of malicious acts against Peacekeepers.
- It will facilitate comprehensive analysis and drive effective strategies for promoting accountability
- The meeting underscores member states' commitment, led by India, to uphold the safety and dignity of peacekeepers worldwide.
- The GOF was launched by India in 2022 to promote accountability for crimes against the Blue Helmets during its presidency of the UN Security Council.
- India, Bangladesh, Egypt, France, Morocco and Nepal are co-chairs of the GOF, which comprises 40 member states.

2. SIERRA LEONE: DECLARED A NATIONAL EMERGENCY

- Sierra Leone's President recently declared a national emergency on substance abuse to crack down on the rising use of synthetic drugs known as Kush.
- Sierra Leone is a tropical country in West Africa.
- It is bordered on the north and east by Guinea, on the south by Liberia and on the west by the Atlantic Ocean.
- The nation is largely made up of lightly wooded hills with a concentration of mangrove swamps along the coast.
- Some of the major ones include the Rokel River, Taia River, Moa River and Sewa River.
- Sierra Leone was colonized in 1787 by formerly enslaved people arriving from England; other groups followed from Nova Scotia (1792) and Jamaica (1800).
- They were sponsored and governed by the private Sierra Leone Company until 1808, when Britain made Sierra Leone a crown colony.
- In 1961, Sierra Leone became independent of the UK.

3. INTERSEX PEOPLE: UN RESOLUTION

- The United Nations Human Rights Council recently made a historic decision by adopting a resolution aimed at combating discrimination and harmful practices against intersex people.
- Intersex people are individuals born with sex characteristics (such as sexual anatomy, reproductive organs, hormonal patterns, and/or chromosomal patterns) that do not align with typical binary notions of male or female bodies.
- They may have any gender identity or sexual orientation.
- Experts estimate that up to 1.7% of the population are born with intersex traits. Intersex individuals are distinct from transgender individuals, as the former's physical characteristics do not necessarily match their gender identity.
- The resolution calls upon member states to address root causes of discrimination, such as stereotypes and misinformation, and to ensure the rights to bodily integrity and autonomy for intersex individuals.
- The resolution on intersex rights promotes ethical values such as combating discrimination, ensuring the highest attainable standard of physical and mental health, and addressing root causes of human rights violations.

4. AUKUS

- The U.S., Britain and Australia are set to begin talks on bringing new members into their AUKUS security pact.
- AUKUS is a trilateral security partnership between the United Kingdom, the United

States of America and Australia agreed in 2021.

- It is intended to strengthen the ability of each government to support security and defense interests, building on longstanding and ongoing bilateral ties.
- It consists of two key pillars.
  - Pillar 1 focuses on supporting Australia to acquire its first conventionally armed, nuclear-powered submarine (It does not involve the transfer of nuclear weapons to Australia.)
  - Pillar 2 focuses on cooperation in eight advanced military capability areas: artificial intelligence (AI), quantum technologies, innovation, information sharing, and cyber, undersea, hypersonic and counter-hypersonic and electronic warfare domains.

5. PEACE CLAUSE AT WTO

- India has invoked the peace clause at the World Trade Organization (WTO) for the fifth consecutive time due to breaching the prescribed subsidy limit for rice offered to its farmers.
- Under the Peace Clause, WTO members refrain from challenging any breach in the prescribed subsidy ceiling given by a developing nation at the dispute settlement forum of the WTO.
- Subsidies over and above the prescribed ceiling are seen as trade-distorting.
- Under the global trade norms, a WTO member country's food subsidy bill should not breach the limit of 10 percent of the value of production based on the reference price of 1986-88.
- India has been seeking amendments to the formula for calculating this food subsidy cap.
- As an interim measure, the WTO members at the Bali ministerial meeting in December 2013 agreed to put in place a mechanism popularly called the Peace Clause and committed to negotiating an agreement for a permanent solution.
- This clause will be there till a permanent solution is found to the food stockpiling issue.
- While the 'peace clause' allows developing countries to breach the 10% ceiling without invoking legal action by members, it is subject to onerous notification requirements and numerous conditions such as not distorting global trade and not affecting food security of other members.

6. SWEDEN JOINED ARTEMIS ACCORDS

- Sweden joined the Artemis Accords, becoming the 38th country to do so. These non-binding arrangements aim to establish norms for outer space activities.
- The Artemis Accords are non-binding principles based on the Outer Space Treaty (OST) of 1967, aiming to guide civil space exploration in the 21st century.
- They are a US-led international partnership(introduced in 2020 by NASA) signed by 38 countries till now, including India (signed in 2023), Japan, Australia, the UK, France, and Canada – on planetary exploration and research.
- They are a set of 13 principles, closely linked to the 2018 US Artemis Program, which aims to return astronauts to the lunar surface, build a space camp there, and carry out deep space exploration

7. GLOBAL FINANCIAL STABILITY REPORT: IMF

- The International Monetary Fund (IMF) released the latest global financial stability report.

Highlights of the report

- It has warned about the risks to the global financial system from persistent high inflation, rising lending in the unregulated credit market, and increasing cyber-attacks on financial institutions.
- Geopolitical risks such as the on-going war in West Asia and Ukraine could affect aggregate supply and lead to higher prices.
- In 2023, India was the second-largest recipient of foreign capital after the U.S. But things could change quickly if western central banks signal that they could keep interest rates high for a long time.
- In its report also noted that the growing unregulated private credit market, in which non-bank financial institutions lend to corporate borrowers, is a growing concern as

troubles in the market might affect the broader financial system in the future.

- The borrowers in the private credit market may not be financially sound and noted that many of them do not have current earnings that exceed even their interest costs.

8. 30TH ANNIVERSARY OF THE MARRAKESH AGREEMENT

- The World Trade Organization (WTO) commemorates the 30th anniversary of the Marrakesh Agreement, a milestone in global trade cooperation
- The Marrakesh Agreement, also known as the Agreement Establishing the World Trade Organization (WTO), was signed on April 15, 1994, in Marrakesh, Morocco by 123 nations.
- The agreement defines the WTO's structure, functions, and scope, and incorporates agreements negotiated under the General Agreement on Tariffs and Trade (GATT) and agreements concluded during the Uruguay Round.
- The WTO officially came into existence on January 1, 1995.

9. INTERGOVERNMENTAL NEGOTIATING COMMITTEE (INC) ON PLASTIC POLLUTION

- The fourth session of the INC to develop an international legally binding instrument on plastic pollution, including in the marine environment (INC-4), opened in Canada's capital, Ottawa.
- The resolution requested the Executive Director of the UN Environment Programme (UNEP) to convene an Intergovernmental Negotiating Committee (INC) to develop "the instrument," which is to be based on a comprehensive approach that addresses the full life cycle of plastic, including its production, design, and disposal.
- The objective of the global plastics treaty is to set a global framework of standards around accountability, responsibilities, financing, material/chemical standards, import/export restrictions, targets.
- An INC meets five times to develop the specific content of the new ILBI by the end of 2024.
- The first session of the INC (INC-1) took place in Punta del Este, Uruguay, from 28 November to 2 December 2022, followed by a second session (INC-2) from 29 May to 2 June 2023 in Paris, France, and a third session (INC-3) from 13 to 19 November 2023 in Nairobi, Kenya.
- INC-5, scheduled for 25 November to 1 December 2024 in Busan, Republic of Korea, is intended as the end of the INC process.

10. GLOBAL REPORT ON FOOD CRISES (GRFC) 2024

- According to the recently released Global Report on Food Crisis (GRFC), nearly 282 million people faced high levels of acute food insecurity in 59 countries in 2023.

Highlights of GRFC 2024

- It analysed a population of 1.3 billion in 2023 across 59 countries. Nearly 282 million people faced high levels of acute food insecurity.
- 2023 was the fifth consecutive year of rise in the number of people suffering acute food insecurity, defined as when populations face food deprivation that threatens lives or livelihoods, regardless of the causes or length of time.
- It identifies conflicts, extreme weather events and economic shocks as the three main drivers behind the exacerbation of food crises in the world.
- With food crisis escalating alarmingly in conflict hotspots in 2023, notably Palestine (Gaza Strip) and Sudan, conflict / insecurity became the primary driver in 20 countries, directly affecting 135 million people.
- The Gaza Strip became the area with the most severe food crisis in the last eight years of GRFC reporting.
- Sudan is facing one of the worst food crises in the world, with almost a third of the population in need of emergency food aid.
- Meanwhile, weather extremes were the main driver for 18 countries, with over 72 million people facing high levels of acute food insecurity because of such extreme weather events.
- The 10 countries with the world's largest food crisis in 2023 were the Democratic Republic of the Congo, Nigeria, Sudan, Afghanistan,

Ethiopia, Yemen, the Syrian Arab Republic, Bangladesh, Pakistan and Myanmar.

- On a positive note, the situation improved in 17 countries in 2023, including the Democratic Republic of Congo and Ukraine.

11. 1ST ASEAN FUTURE FORUM

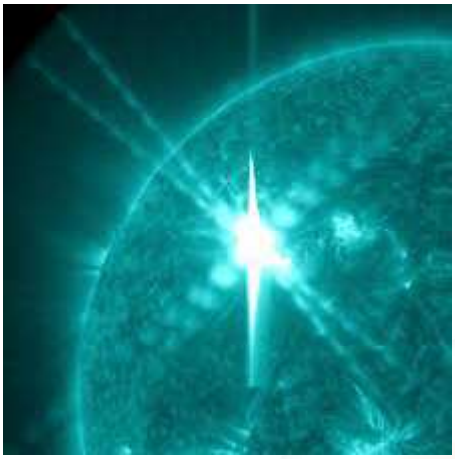
- India's External Affairs Minister, delivered remarks at the 1st ASEAN Future Forum.
- India supports ASEAN unity and centrality, emphasizing the importance of a strong and unified ASEAN in the Indo-Pacific region.
- ASEAN Future Forum was proposed by Vietnam at the 43rd ASEAN Summit in 2023.
- It is a common platform for ASEAN member states as well as partner countries to share new ideas and policy recommendations.
- It aims to contribute to promoting and shaping ASEAN's development path.

12. INDIA-MAURITIUS TAX TREATY

- India and Mauritius amended their double taxation avoidance agreement (DTAA) to include a principal purpose test (PPT) aimed at curbing tax avoidance.
- However, the amended protocol has not been ratified or notified by the Income Tax Department.
- There were concerns that investments through Mauritius might face increased scrutiny by tax authorities, potentially affecting past investments as well.
- Double taxation occurs when the same income is taxed twice in two different jurisdictions before it becomes net income.
- To address this issue and encourage international economic activities, countries sign Double Taxation Avoidance Agreements (DTAAs).
- These agreements establish agreed-upon tax rates and jurisdictions for specific types of income received by tax residents of one country from another country.

SCIENCE AND TECH

1. X-CLASS SOLAR FLARES



- Earth was recently hit by an X-class solar flare strong enough to ionize part of the planet's atmosphere.
- Solar flares are large explosions that occur at the sun's surface when twisted magnetic field lines suddenly snap, emitting large bursts of electromagnetic radiation.
- They are seen as bright areas on the sun and they can last from minutes to hours.
- In a matter of just a few minutes, they heat the material to many millions of degrees and produce a burst of radiation across the electromagnetic spectrum, including from radio waves to x-rays and gamma rays.
- Although solar flares can be visible in white light, they are often more readily noticed via their bright X-ray and ultraviolet emissions.
- The intense radiation emitted during a solar flare can affect satellite communications, disrupt radio signals and even pose a risk to astronauts in space.
- Additionally, the increased solar radiation can lead to geomagnetic storms, which may impact power grids and cause auroras (northern and southern lights).
- Flares are classified according to their strength. The smallest ones are B-class, followed by C, M and X, the largest.
- Similar to the Richter scale for earthquakes, each letter represents a ten-fold increase in energy output.

2. INDRA APP

- INDRRA app was launched as part of the World Meteorological Day celebrations.
- The Indian Naval Dynamic Resource for Weather Analysis (INDRA) app will help to disseminate weather related information and forecasts empowering optimal & quick decision making.
- The application has been developed by BISAG (Bhaskaracharya National Institute for Space Applications and Geo-informatics) in coordination with Directorate of Naval Oceanology and Meteorology, Indian Navy.
- It undertakes technology development & management, research & development, facilitate National & International cooperation, capacity building and support technology transfer & entrepreneurship development in area of geo-spatial technology.
- The organisation has three main domain areas: Satellite Communication, Geo-informatics and Geo-spatial technology.
- Nodal Ministry: Ministry of Electronics & Information Technology (MeitY), Government of India.

3. ONYX SUPERSONIC CRUISE MISSILE

- Russia's Onyx supersonic cruise missile, which has frequently struck Ukrainian targets,

  is slated to get deadlier with a new target seeker.
- The P-800 Onyx, a supersonic medium-range cruise missile, is designed to combat surface ship groups, as well as to destroy ground targets in conditions of strong fire and electronic countermeasures
- Also known as Russian Brahmos, it can reach speeds of over 3,000 km/h, making it extremely difficult to intercept.

- Additionally, the missile operates at an altitude of 10-15 meters above land or water, further enhancing its stealth capabilities.
- It can be launched from surface ships, submarines and land-based equipment.
- It is a self-guided munition, designed with the "shoot and forget" principle in mind.
- Unlike some other missiles that rely on extensive target data, the Onyx missile requires minimal information about its target to strike it successfully.

4. HUME AI

- A New York-based research lab and technology company Hume, has introduced the 'first conversational AI with emotional intelligence'.
- Hume AI is the world's first emotionally intelligent voice AI.
- It accepts live audio input and returns both generated audio and transcripts augmented with measures of vocal expression.
- It is essentially an API that is powered by its proprietary empathic large language model (eLLM).
- This eLLM reportedly understands and emulates tones of voices and word emphasis to optimise human-AI conversations.
- It is trained on human reactions to optimize for positive expressions like happiness and satisfaction. EVI will continue to learn from users' reactions.
- By processing the tune, rhythm and timbre of speech, EVI unlocks a variety of new capabilities, like knowing when to speak and generating more empathic language with the right tone of voice.

5. ORGANIC ELECTROCHEMICAL TRANSISTOR

- Researchers recently outlined a new strategy to fabricate high-density and mechanically flexible Organic Electrochemical Transistor (OECTs).
- Organic Electrochemical Transistor is an emerging class of transistor based on organic superconducting materials known for their ability to modulate electrical current in response to small changes in the voltage applied to their gate electrode.
- It is a device capable of simultaneously controlling the flow of electronic and ionic currents.
- They have various notable advantages, including promising amplification and sensing capabilities, low power consumption, low driving voltages and a versatile structure.
- They can be used to create biosensors, wearable devices and neuromorphic systems.
- Transistor is a semiconductor device for amplifying, controlling and generating electrical signals.
- It is the active components of integrated circuits or "microchips," which often contain billions of these minuscule devices etched into their shiny surfaces.

6. TRI-SERVICE COMMON DEFENCE STATION IN MUMBAI

- The Armed Forces are undertaking a major initiative to convert Mumbai into India's first-ever tri-service common defence station, representing a pivotal stride towards fostering joint operations among the Army, Navy, and Air Force
- This strategic move aims to consolidate all facilities and resources of the three services, encompassing logistics, infrastructure, repair and maintenance, and supplies, under a unified leadership framework.
- Currently, Mumbai houses separate wings of the three services, operating independently.
- The Navy, with its substantial presence in Mumbai, will assume the lead role in this new integrated setup.
- Sulur, located near Coimbatore, and Guwahati are expected to be selected as the sites for the second and third common defence stations.
- Currently, there are no common defence stations in India.

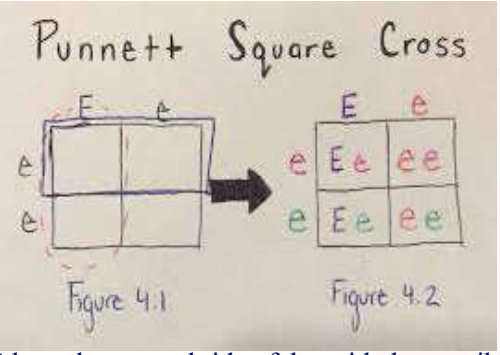
7. USSD-BASED CALL FORWARDING

- The Department of Telecom (DoT) has directed telecom operators to halt USSD-based call forwarding from April 15 due to misuse, requiring subscribers to activate it through alternative methods.
- Unstructured Supplementary Service Data (USSD) is a protocol used in GSM networks for sending short text messages.

- It facilitates instant messaging without storing messages on the operator or subscriber's device.
- USSD comes in two types:
    - Pull (user-initiated) and
    - Push (operator-initiated), using * and # characters and numeric codes.

8. PUNNETT SQUARE

- Punnett square is named after British geneticist Reginald Punnett.



- Along the top and side of the grid, the possible genetic traits of one parent on one side and the other parent on the other side is listed.
- Then, you fill in the squares by combining the traits from each parent.
- Each square effectively represents a possible combination of traits that their offspring could inherit.
- It's a simple way to visualise the probabilities of different traits showing up in the offspring.
- They are commonly used in biology to understand inheritance patterns, like when you learn about dominant and recessive genes in school.
- It is a useful tool that helps predict the variations and probabilities resulting from cross-breeding.

9. WHITE RABBIT COLLABORATION

- CERN, the European Organization for Nuclear Research, recently launched White Rabbit Collaboration.
- White Rabbit Collaboration is a membership-based global community whose objective is to maintain a high-performance open-source technology that meets the needs of users and to facilitate its uptake by industry.
- The WR Collaboration will provide dedicated support and training, facilitate R&D projects between entities with common interests and

complementary expertise, and establish a testing ecosystem that fosters trust in products that incorporate the open-source technology.

- White Rabbit (WR): It is a technology developed at CERN, in collaboration with institutes and companies, to synchronize devices in the accelerators down to sub-nanoseconds and solve the challenge of establishing a common notion of time across a network.
- White Rabbit Switches provides sub-nanosecond synchronization accuracy, which formerly required dedicated hard-wired timing systems, with the flexibility and modularity of real-time Ethernet networks. It achieves sub-nanosecond accuracy in Ethernet based networks.
- A key distinctive feature of White Rabbit is that it is open source and based on standards. Companies and institutes can therefore adapt it to their needs and incorporate it in their products and systems.

10. OPTIDROP PLATFORM

- The Centre for Cellular and Molecular Platforms (C-CAMP) in Bengaluru has developed a new platform called OptiDrop.
- OptiDrop Platform is an innovative microfluidic chip-based platform that simplifies and reduces the cost of studying single cells. It employs a novel approach that enables precise and cost-effective analysis of single cells encapsulated in droplets.
- The platform's unique features include live data visualisation, a smaller data footprint, and a 'closed' system design that prevents external contamination.
- This research was supported by the Biotechnology Industry Research Council (BIRAC), the Department of Science and Technology (DST) and the Ministry of Human Resource Development (MHRD).

- This cutting-edge technology has potential applications in diagnostics, therapeutics, agriculture and animal health.
- It helps in studying the impact on individual cells during a drug screen, environment control (water contamination counter), detection and sorting of CAR-T cells in immuno-oncotherapeutics, selection of CRISPR-modified single cells and selection of high-efficiency clones in single-cell genomics

11. MOTHER OF DRAGONS COMET

- A rare, formerly-horned comet that astronomers have dubbed the "Mother of Dragons" is now visible after dusk in the Northern Hemisphere.
- Mother of Dragons comet is officially known as Comet 12P/Pons-Brooks.
- It is a 'Halley-type' comet with an orbital period of roughly 71 years and a nucleus approximately 30 km wide.
- It is composed of ice, dust and rocky material. When it approaches the Sun, heat causes the ice inside the comet to turn from solid to gas.
- It is classified as a Jupiter-family comet, meaning its orbit is influenced by Jupiter's gravitational pull.
- It typically reaches perihelion (closest approach to the Sun) around the orbit of Mars and can become visible to observers on Earth during its close approach.
- Its closest approach to Earth will occur in June 2024.

12. HAVANA SYNDROME

- There has been a noticeable surge in interest in the Havana Syndrome, particularly concerning its occurrence among US diplomats.
- Havana Syndrome is a mysterious illness causing a range of neurological problems. It was first reported by the US Embassy staff in Havana, Cuba in 2016, when they began experiencing extreme headaches and hearing piercing sounds at night.
- Other symptoms including bloody noses, headaches and vision problems were later reported by embassy staff in China and Europe.

13. ATOMIC CLOCKS

- India is deploying atomic clocks nationwide to synchronize all digital devices with Indian Standard Time, enhancing uniformity and national security.
- An atomic clock is a highly accurate timekeeping device that combines a quartz crystal oscillator with an atom, typically caesium or hydrogen, to measure time precisely.
- It uses the consistent frequency of atoms to maintain accurate time, making it more stable than conventional quartz clocks.
- Types of Atomic Clocks : Caesium and hydrogen maser atomic clocks
- Hydrogen maser clocks are more accurate and used in scientific research.
- Quartz crystal oscillators are commonly used in modern clocks, vibrating at a precise frequency when voltage is applied.
- However, they become slightly slow every hour and require frequent adjustments.
- Atomic clocks are like super accurate timekeepers.
    - They use special atoms, usually caesium atoms, which vibrate at a very steady rate.
    - By sending microwaves to these atoms, we can make them vibrate even more regularly.
- Atomic Clocks in India Council of Industrial and Scientific Research (CSIR)-National Physical Laboratories (NPL) New Delhi maintains Indian Standard Time with caesium and hydrogen maser clocks.
- CSIR-NPL is now setting up new atomic clocks in Bhubaneswar, Jaipur, and Hyderabad, in addition to the existing ones in Faridabad and Ahmedabad. By June, these new clocks will be installed, and the government will require all device manufacturers to sync with Indian Standard Time.

14. PRATUSH TELESCOPE

- The PRATUSH mission, led by the Raman Research Institute in Bengaluru, India, in collaboration with ISRO, aims to deploy a high-resolution radio telescope on the moon's far side.

- Equipped with a wideband frequency-independent antenna, a self-calibrating analog receiver, and a digital correlator, PRATUSH is designed to detect signals from the first stars and galaxies, shedding light on the cosmic dawn of the universe.

- PRATUSH aims to answer fundamental questions about the early universe, such as when the first stars formed, the nature of these stars, and the characteristics of the light they emitted. It targets instrument sensitivity at the level of a few millikelvin without being limited by systematic features.
- By deploying PRATUSH, astronomers anticipate gaining unprecedented insights into the Dark Ages of the universe, uncovering vital information about the origins and evolution of cosmic structures, which could revolutionize our understanding of the cosmos.

15. OZONE ON CALLISTO: JUPITERS LARGEST MOON

- An international team of scientists, led by researchers from the Physical Research Laboratory (PRL) in Ahmedabad, has discovered strong evidence indicating the presence of ozone on Callisto, one of Jupiter's largest moons.
- The study, published in the March 2024 issue of the journal Icarus, sheds light on the complex chemical processes occurring on the

icy celestial body and its potential for hosting life.

- The team, led by R. Ramachandran from PRLs Atomic, Molecular, and Optical Physics Division, investigated the chemical evolution of sulphur dioxide (SO2) ice under irradiation, simulating the conditions on Callistos surface.
- The experiments were conducted at the National Synchrotron Radiation Research Center (NSRRC) in Taiwan, which provided access to the high-energy radiation sources needed to recreate the solar radiation reaching the moons surface.

16. SHALLOWFAKES

- With the Lok Sabha elections scheduled, social media platforms are abuzz with

misinformation, mostly in the form of shallow fakes.

- Like deepfake, shallowfake is also an act of morphing people's pictures and using them for malicious activities.
- But unlike deepfake, which is created by using advanced artificial intelligence (AI) software, shallowfake can be created by simply using basic editing software.
- They are made with existing technologies for example, a conventional edit on a photo, slowing-down a video to change the speech patterns of an individual or more often, relying on mis-captioning or mis-contextualising an existing image or video, claiming it is from a time or place which it is not from.
- And precisely because of this easier way to create them, many experts consider shallowfakes to be bigger threats than deepfakes.
- The term 'shallow' implies the quality of such fakes, which are lower in quality compared to deepfakes.
- They are used to create a false proof of identity or address, including photo ID documents like passports, driving licences etc.
- It is also used to create fake supporting evidence to support a claim or transaction, like

contracts, agreements and invoices for services, no claims discount certificates, etc.

- Deepfakes are a compilation of artificial images and audio put together with machine-learning algorithms to spread misinformation and replace a real person's appearance, voice, or both with similar artificial likenesses or voices.
- The term "deepfake" combines the deep learning concept with something fake.

17. ELECTROENCEPHALOGRAM

- The year 2024 marks the centennial of the discovery of the electroencephalogram (EEG) by German psychiatrist Hans Berger.
- It remains a crucial tool for understanding the brain.
- Electroencephalogram (EEG) is a recording of brain activity. It is a test that detects abnormalities in your brain waves, or in the electrical activity of your brain.
- During the procedure, electrodes consisting of small metal discs with thin wires are pasted onto your scalp.
- The electrodes detect tiny electrical charges that result from the activity of your brain cells.
- The EEG is used to evaluate several types of brain disorders.
- The EEG may also be used to monitor blood flow in the brain during surgical procedures.

18. PROJECT AKASHTEER

- Project Akashteer is a cutting-edge initiative designed to automate air defence control and reporting processes by digitizing them.
- It aims to deliver an unprecedented level of situational awareness and control for the force to ensure the safety of friendly aircraft and engage hostile aircraft in contested airspace.
- It will enable monitoring of low level airspace over the battle areas of Indian Army and effectively control the Ground Based Air Defence Weapon Systems.
- Akashteer Command and Control Systems are developed by Bharat Electronics Limited (BEL) as part of the 'AtmaNirbhar Bharat' initiative.
- The system's control centres, designed to be vehicle-based and mobile, can maintain operational capabilities even in challenging communication environments.

19. WORLD ANTI-DOPING AGENCY

- India has emerged as the country with the highest percentage of doping offenders, according to the 2022 testing figures released by the WADA
- Its governance and funding are based on an equal partnership between the sport movement and governments of the world.
- Its primary role is to develop, harmonize and coordinate anti-doping rules and policies across all sports and countries.
- Its key activities include scientific research, education, the development of anti-doping capacities and monitoring of the World Anti-Doping Code (Code), the document harmonizing anti-doping policies in all sports and all countries.
- The First World Conference on Doping in Sport held, in Lausanne, Switzerland, on February 2-4, 1999, produced the Lausanne Declaration on Doping in Sport.

20. STRATEGIC FORCES COMMAND

- The new generation ballistic missile Agni-Prime was successfully flight-tested by the SFC along with the Defence Research and Development Organisation (DRDO) recently
- Strategic Forces Command (SFC) sometimes called Strategic Nuclear Command, forms part of India's Nuclear Command Authority (NCA), which is responsible for command-and-control decisions regarding India's nuclear weapons programme.
- It is responsible for the management and administration of the country's tactical and strategic nuclear weapons stockpile. It was created in 2003.
- It has the sole responsibility of initiating the process of delivering nuclear weapons and warheads after acquiring clear approval from the NCA.
- Moreover, the final target selection is also done by the SFC through a calibrated, cumulative process involving various levels of decision-making, including formal approval from the NCA.
- It manages and administers all strategic forces by exercising complete command and control

over nuclear assets and producing all contingency plans as needed to fulfil the required tasks.

- Since its inception, the SFC's command, control and communication systems have been firmly established and the command has attained a high state of operational readiness.
- It consists of officers and personnel of the Indian Army, Indian Air Force (IAF), and Indian Navy who are deputed from their respective services.

21. WORLD HEALTH DAY 2024

- World Health Day 2024 is celebrated every year on April 7.
- World Health Day is aimed at raising awareness about global health issues and encourages people to live healthier.
- The origin of World Health Day goes back to 1948 when First Health Assembly was held by the organisation, where it was decided to commemorate April 7 as World Health Day and it came into effect in 1950.
- The theme of 2024 World Health Day is '**My health, my right**'.
- This theme was chosen to champion the right of everyone, everywhere to have access to quality health services, education and information, as well as safe drinking water, clean air, good nutrition, quality housing, decent working and environmental conditions and freedom from discrimination.

22. NIMMU-PADAM-DARCHA ROAD IN LADAKH: CONNECTIVITY

- The Border Roads Organisation (BRO) has accomplished a significant milestone by establishing connectivity on the Nimmu-Padam-Darcha Road in Ladakh.
- Nimmu-Padum-Darcha Road serves as a vital link between the Indian Union territory of Ladakh and the state of Himachal Pradesh, traversing through the picturesque region of Zanskar, Ladakh.
- It is an all-weather road from Manali (Himachal Pradesh) to Leh (Ladakh) through Darcha and Nimmu on the Kargil–Leh Highway.
- It was constructed by the Border Roads Organisation (BRO).
- It crosses only one pass—Shinkun La (16,558 feet)—on which tunnel work is about to commence by the BRO.
- It will be the first all-weather road connecting Ladakh to the rest of the country.
- The connectivity will strengthen defence preparedness and provide a boost to economic development in the Zanskar valley.

23. OCEANIC NIÑO INDEX

- The US National Oceanic and Atmospheric Administration has predicted an 83% probability of the Oceanic Niño Index (ONI) transitioning to a neutral range by April-June 2024.
- Oceanic Niño Index is the primary indicator for monitoring the ocean part of the seasonal climate pattern called the El Niño-Southern Oscillation, or "ENSO".
- It tracks the running 3-month average sea surface temperatures in the east-central tropical Pacific between 120°-170°W, near the International Dateline, and whether they are warmer or cooler than average.
- Index values of +0.5 or higher indicate El Niño and values of -0.5 or lower indicate La Niña.
- El Nino and La Nina are two opposing climate trends that deviate from the normal conditions and normally run nine to twelve months, but can often extend.
- These events occur every two to seven years on average (El Nino is more frequent than La Nina), but not on a regular basis and together are referred to as the El Nino-Southern Oscillation(ENSO) cycle by scientists.

24. LAB-GROWN MINIBRAINS

- Minibrains grown in the lab may help explain why concussions and other traumatic brain injuries (TBIs) raise people's risk of dementia.

- Lab-grown minibrains are scientifically known as brain organoids, but often called "minibrains" and serve as miniature, simplified models of full-size human brains.

- Scientists typically grow brain organoids from stem cells, a type of immature cell that can give rise to any cell type, whether blood, skin, bowel or brain.
- The stem cells used to grow organoids can either come from adult human cells or more rarely, human embryonic tissue.
- Scientists collect adult cells and then expose them to chemicals in order to revert them into a stem cell-like state.
- The resulting stem cells are called "induced pluripotent stem cells" (iPSC), which can be made to grow into any kind of tissue.
- To give rise to a minibrain, scientists embed these stem cells in a protein-rich matrix, a substance that supports the cells as they divide and form a 3D shape. Alternatively, the cells may be grown atop a physical, 3D scaffold.
- These organoids can potentially be useful in basic research, drug development and even computer science.

25. PARIVARTAN CHINTAN: A TRI-SERVICE CONFERENCE

- Parivartan Chintan, an upcoming Tri-Service Conference aimed at generating new and fresh ideas, initiatives, and reforms to propel Jointness and Integration efforts, is being held in New Delhi on 8th April 2024.
- It was chaired by Chief of Defence Staff, General Anil Chauhan.
- It is the first-ever conference of the Heads of all Tri-Services Institutions.
- Chief of Defence Staff (CDS) was created in 2019 on the recommendations of a committee of defence experts headed by Lt General DB Shekatkar.
- General Bipin Rawat was the first CDS in the country.
- His core function is to foster operational synergy among Indian military branches.

26. TSAT-1A

- Tata Advanced Systems Limited (TASL) recently announced the successful deployment in space of its sub-metre resolution optical satellite, TSAT-1A, by SpaceX's Falcon 9 rocket.
- TSAT-1A is an optical sub-metre-resolution Earth observation satellite.
- It was built by Tata Advanced Systems Limited (TASL) in collaboration with Latin American company Satellogic Inc, following a collaboration agreement between the two companies in late 2023.
- TSAT-1A was assembled in TASL's Assembly, Integration, and Testing (AIT) plant at its Vemagal facility in Karnataka.
- It was launched by SpaceX's Falcon 9 rocket from the Kennedy Space Center, Florida, in the US.
- TSAT-1A's core strength lies in its ability to capture military grade imagery of Earth's surface with sub-meter resolution.
- It is equipped with both multispectral and hyperspectral imaging capabilities.
- This technology allows TSAT-1A to collect data across a wide range of wavelengths within the electromagnetic spectrum, providing a deeper and more nuanced understanding of land, water, and various natural resources.
- TSAT-1A boasts greater collection capacity, a wider dynamic range (the ability to capture detail in both very bright and very dark areas), and low-latency delivery of data.
- This satellite will be used by Indian defense forces to gather discreet information, and this information will be shared with friendly nations.
- It can enable defence forces to enhance their preparedness, response capabilities, and strategic decision-making.

27. C-DOME

- Israel for the first time deployed its ship-mounted defence system, called the C-Dome.
- C-Dome is a naval version of Israel's Iron Dome air defence system, used to shield against rocket and missile attacks.
- The Iron Dome, which was activated in 2011 and has an effectiveness of about 90%, works by using radars to detect short-range rockets before destroying them with its own missiles.
- The C-Dome, which was first unveiled in 2014, declared operational in 2022,works similarly to the Iron Dome, using some of the same technology, except that it's mounted on ships.

- It is mounted on Sa'ar 6-class corvettes, German-made warships, and uses the same interceptor as the Iron Dome.
- Unlike the Iron Dome, which has its own dedicated radar, the C-Dome is integrated into the ship's radar to detect incoming targets.
- C-Dome ensures full-circular vessel protection and high kill probability against a full spectrum of modern threats—maritime and coastal.
- Iron Dome is Israel's air missile defense system that can defend against short-range rockets, intercepting them in the air above the state.
- It is capable of successfully handling multiple rockets at a time.
- Developed by Rafael Advanced Defense Systems and Israel Aerospace Industries, the system became operational in 2011.

28. COORDINATED LUNAR TIME

- The US White House officially directed the National Aeronautics and Space Administration (NASA) to create a time standard for the Moon, which different international bodies and private companies can use to coordinate their activities on the lunar surface
- Coordinated Lunar Time (LTC) will provide a time-keeping benchmark for lunar spacecraft and satellites that require extreme precision for their missions.
- It will also synchronise the communication between satellites, astronauts, bases and the Earth.
- A unified time standard would be essential for coordinating operations, ensuring the reliability of transactions and managing the logistics of lunar commerce.
- LTC : As there is less gravity on the Moon, time ticks slightly faster there relative to the time on the Earth.In other words, for someone on the Moon, an Earth-based clock will appear to lose on average 58.7 microseconds per Earth day with "additional periodic variations".
- It can create problems for situations such as a spacecraft seeking to dock on the Moon, data transferring at a specific time, communication, and navigation

29. DARK ENERGY SPECTROSCOPIC INSTRUMENT (DESI)

- DESI's ground breaking project harnesses 5,000 robots to peer 11 billion years into the past, revealing unprecedented insights into our expanding universe.
- It found the most precise measurement of the universe expansion rate at a rate of 68.5 (±0.6) kilometres per second per megaparsec (a million parsec; 1 parsec equals 3.2616 light years).
- DESI made a huge 3D map to study dark energy's impact over 11 billion years.
- In the Lambda CDM model, matter and dark energy affect the universe's expansion differently: matter slows it, while dark energy speeds it up.
- Both dark energy and dark matter dominate the universe, comprising about 95% of it.

DESI

- DESI is a project aimed at mapping the universe to study dark energy's effects over billions of years.
- It is the product of an international collaboration that brings together researchers from more than 70 institutions (including from India).
- It is a ground-based dark energy experiment, located on the Mayall 4-meter telescope at Kitt Peak National Observatory (USA)

30. OPERATION MEGHDOOT

- The Indian Army recently commemorated 40 years since 'Operation Meghdoot' began for securing the Siachen Glacier.
- Operation Meghdoot was the code-name for the Indian Armed Forces operation to capture the Siachen Glacier, a strategically crucial region dominating Northern Ladakh.
- Siachen has been a bone of contention between India and Pakistan ever since the Karachi Agreement of 1949, when the area was left undivided due to the hostile terrain and extremely rough weather.
- Operation Meghdoot was India's bold military response to what New Delhi calls Pakistan's "cartographic aggression" in the uncharted territory of Ladakh, north of map reference NJ9842, where New Delhi and Islamabad had agreed the Line of Control (LoC) ran up to.

- The primary objective behind this operation was to pre-empt the seizure of Sia La and Bilafond La passes by the Pakistan Army.
- Launched on April 13, 1984, this military operation was unique as the first assault launched on the world's highest battlefield.
- It is distinguished by being one of the greatest examples of seamless coordination and synergy between the Indian Army and the Air Force.
- The military action resulted in Indian troops gaining control of the entire Siachen Glacier.

31. WORLD'S FIRST 'MISS AI' BEAUTY PAGEANT

- The World AI Creator Awards (WAICAs) has announced the world's first 'Miss AI' beauty pageant, featuring AI-generated models competing in a unique event that blends traditional beauty pageantry with the world of AI creators.
- Contestants will be judged on beauty, tech, and social media influence, with a focus on their use of AI tools to craft digital artwork.
- The winner of 'Miss AI' will receive a $5,000 cash prize, promotion on the Fanvue platform, a mentorship program valued at $3,000, and PR support worth over $5,000.
- Entrants must be entirely AI-generated, with no restrictions on the tools used.
- The judging panel includes two AI-generated judges, Aitana Lopez and Emily Pellegrini, as well as two humans: Andrew Bloch, an entrepreneur and PR adviser, and Sally-Ann Fawcett, a beauty pageant expert and author.
- Entries were accepted starting from April 14, and the winners will be announced on May 10, followed by an online awards ceremony later in the month.
- The competition aims to highlight the capabilities of AI in the fashion and beauty industry, showcasing the potential for technology to enhance creativity and innovation in these fields.

32. FREQUENCY OF HEATWAVE INCREASES

- India Meteorological Department (IMD) has predicted an increase in the maximum temperature and the frequency of heatwave conditions in the forthcoming days over eastern and southern India.
- Heat wave is a condition of air temperature which becomes fatal to human body when exposed.
- It is defined based on the temperature thresholds over a region in terms of actual temperature or its departure from normal.
- The IMD will declare a heatwave:
    - If the maximum temperature recorded at a station is 40 degrees Celsius or more in the plains, 37 degrees Celsius or more in the coast, and 30 degrees Celsius or more in the hills.
    - a heatwave's severity is determined by its departure from normal temperature.
    - There is a 'normal heatwave' when the departure is by 4.5-6.4 degrees Celsius and a 'severe heatwave' if the departure is greater.
- Heat wave declaration could also be based on actual maximum temperature:
- A 'heatwave' is when this figure is greater than 45 degrees Celsius and a 'severe heatwave' when greater than 47 degrees Celsius.
- The IMD takes these two 'routes' only when at least two stations in a meteorological subdivision report such a high maximum or when at least one station has recorded a corresponding departure from the normal for at least two consecutive days.

33. DRAGONFLY MISSION : NASA

- NASA confirmed Dragonfly rotorcraft mission to Saturn's organic compound-rich moon Titan with a budget of $3.35 billion and a launch date set for July 2028.
- Dragonfly Mission is a "dual quadcopter" designed to fly across the surface of Titan, Saturn's largest moon.

- It will explore a variety of locations on Saturn's moon Titan.

- It will spend most of its time on the moon's surface making science measurements. It will use a radioisotope power system like the Curiosity rover on Mars.
- Its flights, data transmission and most science operations will happen during the day, and it will have a lot of time to recharge during night on Titan.
- It is a rotorcraft, targeted to arrive at Titan in 2034, will fly to dozens of promising locations on the moon, looking for prebiotic chemical processes common on both Titan and the early Earth before life developed.
- It marks the first time NASA will fly a vehicle for science on another planetary body. The rotorcraft has eight rotors and flies like a large drone.

34. BIOHACKING

- Biohacking is picking up in India especially in metro cities like Delhi and Mumbai
- Biohacking is a term used to describe various tips and tricks for enhancing the body's ability to function at peak performance—and maybe even extend one's lifespan.

- It includes the practice of employing methods drawn from fields like biology, genetics, neuroscience and nutrition to enhance physical or mental performance, improve overall health and well-being, or achieve a specific health outcome.
- Most types of biohacking generally fall into one of the following categories below:
- Lifestyle: It focuses on making positive health and behavior choices. It is probably the most accessible way most people can start experiencing biohacking, as it includes factors like dietary shifts, breathwork, meditation and exercise.
- Molecular: It involves the use of natural and synthetic molecules that can help shift one's biology. Taking supplements would fall into this biohacking category.
- Biologics: These are biological products that are meant to improve or enhance biology. They could be cells, or they could be small little information packets like exosomes, which are basically biological bundles of DNA, mRNA proteins and growth factors. Biologics typically need to be ingested, injected (such as stem cells) or delivered intravenously (i.e. by IV transfusion).
- Technology: It includes devices like wearables (such as smartwatches) and diagnostics (such as blood sugar monitors). In such cases, biohacking uses technology to gather data about the body and its functioning so an individual can use that information to adjust their health as they strive for improved performance.

35. SYMPATHETIC SOLAR FLARE: OBSERVED

- A rare "super-sympathetic" solar flare event featuring four simultaneous eruptions, was recently observed by astronomers.
- A solar flare is an intense burst of radiation coming from the release of magnetic energy associated with sunspots.
- They are our solar system's largest explosive events.
- They are seen as bright areas on the sun, and they can last from minutes to hours.
- In a matter of just a few minutes, they heat the material to many millions of degrees and produce a burst of radiation across the electromagnetic spectrum, including from radio waves to x-rays and gamma rays.
- Although solar flares can be visible in white light, they are often more readily noticed via their bright X-ray and ultraviolet emissions.
- The intense radiation emitted during a solar flare can affect satellite communications, disrupt radio signals, and even pose a risk to astronauts in space.
- Additionally, the increased solar radiation can lead to geomagnetic storms, which may impact power grids and cause auroras (northern and southern lights) at lower latitudes.

- Sympathetic Solar Flare occurs when sunspots or filaments are invisibly linked by massive magnetic field loops that arch above the solar surface. When one flare detonates, the others follow in rapid succession.
- Sympathetic solar flares typically involve just two linked flares, ranging in intensity from minor outbursts to X-class flares, the most powerful class of solar flares.

36. DRAGON'S EGG NEBULA

- Astronomers have been puzzled by a nebula, nicknamed the Dragon's Egg, which comprises a cloud of gas and dust enveloping a binary star system.
- The Dragon's Egg Nebula formed due to the intense stellar winds emitted by a massive, hot central star.
- One of the stars in the pair of binary stars has a magnetic field, while the other does not, which is unusual for massive stars.
- The magnetic star is about 30 times more massive than the Sun, while its companion is about 26.5 times more massive than the Sun.
- The researchers believe the system started as a triple star system about 4-6 million years ago.
- The merger of the two innermost stars ejected gas and dust into space, forming the nebula around 7,500 years ago.
- The nebula contains an unusually large amount of nitrogen due to the merger.

37. SHENZHOU-18 MISSION: CHINA

- China launched the Shenzhou-18 spacecraft carrying a three-member crew to its orbiting Tiangong space station. The mission is part of China's ambitious space program, which aims to put astronauts on the moon by 2030.
- The Shenzhou-18 spacecraft lifted off from the Jiuquan Satellite Launch Center in northwestern China atop a Long March 2-F rocket.
- The crew, consisting of Commander Ye Guangfu and fighter pilots Li Cong and Li Guangsu, is expected to reach the space station about six-and-a-half hours after liftoff.
- Mission Objectives : During their six-month stay on the Tiangong space station, the Shenzhou-18 crew will:
- Conduct scientific tests
- Install space debris protection equipment
- Carry out payload experiments
- Popularize science education
- The crew will relieve the Shenzhou-17 team, which has been staffing the space station since October 2023.

38. HUBBLE TENSION

- In a study published recently, scientists from Germany and the U.K. led a radical explanation for the Hubble tension.
- Hubble Tension refers to a discrepancy between the measurements of the rate of expansion of the universe, known as the Hubble constant.
- The Hubble constant, denoted as H0, describes the rate at which galaxies are moving away from each other due to the expansion of the universe.
- If a researcher wants to estimate the Hubble constant, they have two main avenues. These are the cosmic distance ladder and the cosmic microwave background (CMB).
- Thus, these measurements have yielded slightly different values for the Hubble constant. This discrepancy is known as the Hubble tension.
- The significance of the Hubble tension is that it could potentially indicate unknown physics or systematic errors in the measurements.
- Resolving the tension is crucial for refining our understanding of the universe's expansion and its underlying physics.
- Cosmic microwave background (CMB) is a sea of photons, the particles of light, present throughout the universe. They are left over from the Big Bang, its afterglow. Scientists have measured temperature changes in the CMB and studied its large-scale properties using complicated trigonometry.
- Cosmic distance ladder is used to measure the distance to objects that are close, further away, or very far away from the earth. One object in particular is the Cepheid variable star. The Cepheid variables have a unique feature: their brightness varies in a predictable way over time.

MISCELLANEOUS

1. 100 YEARS OF VAIKOM SATYAGRAHA

- India's one of the most supported and widely accepted protests, 'Vaikom Satyagraha', is celebrated its 100 years recently.
- Vaikom Satyagraha is the first anti-caste movement, as the pupil of the depressed class and untouchables were restricted from entering the temple.
- It was aimed to establish the rights of the oppressed classes to walk on the roads to the Shree Mahadeva Temple in Vaikom in Kottayam district.
- In AICC (All India Congress Committee) meeting in Kakinada 1923, K Madhavan along with Sardar Panikkar and KP Kesava Menon submitted a petition to the Travancore legislative council.
- The petition sought to grant the right to temple entry and worship of gods for all sections of the society irrespective of caste, creed and community. The movement was launched on 30th March 1924.

2. HOCKEY INDIA AWARDS 2023

- The Hockey India Awards 2023 were held in New Delhi on March 31, 2024 to celebrate the outstanding Indian hockey players from the previous calendar year.
- Mens Player of the Year: Hardik Singh, the vice-captain of the Indian mens team, was named the Player of the Year.
- Womens Player of the Year: Salima Tete, an Olympian, was awarded the Player of the Year for her role in the Indian womens team that won the bronze medal at the Asian Games in Hangzhou last year.

3. TENTATIVE UNESCO LIST OF WORLD HERITAGE SITES

- 6 new sites from Madhya Pradesh have found place in the Tentative UNESCO list of World Heritage Sites (WHS).
- The sites included in the new list included Gwalior Fort, Historical Group of Dhamnar Bhojeshwar Mahadev Temple, Rock Art Sites of Chambal Valley, Khooni Bhandara, Burhanpur, and Gond monuments of Ramnagar, Mandla.
- **Gwalior Fort**
  - It is renowned for its formidable walls, stands atop a hill providing panoramic views of the surrounding city.
  - Historically, it is believed that the fort's first foundations were laid in the 6th century AD by Rajput warrior Suraj Sen.
  - Suraj Sen was the local chieftain who suffered from a severe leprosy but was healed by a hermit-saint named Gwalipa. In gratitude for this event, he established the Gwalior City named after him.
- **Historical Group of Dhamnar**
  - It comprises 51 rock-cut caves, stupas, chaityas, and dwellings dating back to the 7th century AD.
  - Among these, the colossal statue of Gautam Buddha in the nirvana pose is a significant highlight.
  - Noteworthy caves include the Bari Kacheri and Bhima Bazar on the northern bank, known for their historical importance and architectural features.
- **Bhojeshwar Mahadev Temple**
  - It is dedicated to Lord Shiva and boasts a massive Linga carved from a single stone.
  - Commissioned by Raja Bhoj in the 11th century, this temple is revered for its grandeur and unique architecture.
- **Rock Art Sites of the Chambal Valley**
  - It hosts the world's largest concentration of rock art sites, showcasing scenes from various historical periods and civilizations.
  - These sites, spanning across Madhya Pradesh, Rajasthan, and Uttar Pradesh, provide insights into ancient human life and cultural evolution.
- **Burhanpur's Khooni Bhandara**
  - It is an underground water management system comprising eight waterworks built by Abdurrahim

Khankhana in the historical city of Burhanpur.
    - It was built using the Persian qanat approach and designed by Persian geologist, Tabkutul Arz
- **Gond Memorial of Ramnagar, Mandla**
    - The region formerly known as the Central Provinces of India and covering parts of the present-day states of Madhya Pradesh, Chhattisgarh and Maharashtra; was historically called Gondwana, the home of the largest heterogenous tribe of India, the Gond tribe.

4. TRIPURA'S MATABARI PERA AND PACHRA RECEIVE GI TAG

- Two traditional items from the state, Matabari Pera and Pachra, have been honoured with the

Geographical Indication (GI) tag marking a significant milestone for local artisans and weavers.

- Matabari Pera, a dairy-based confectionery that served as prasad at the Tripurasundari temple, and Pachra, a handwoven cloth used by Indigenous communities, have been recognised with the prestigious GI tag.
- Tripura's iconic queen pineapple was previously honoured with the GI tag, along with 13 other products from the Northeast, highlighting the region's diverse and unique offerings.

5. SKOCH ESG AWARD 2024

- REC Limited, a Maharatna Central Public Sector Enterprise under the Ministry of Power and a leading Non-Banking Finance Company (NBFC) has been awarded the prestigious SKOCH ESG Award 2024 in the 'Renewable Energy Financing' category.
- The SKOCH ESG Awards recognize organizations that demonstrate outstanding performance in Environmental, Social, and Governance (ESG) practices.
- The award serves as a benchmark for evaluating organizations' commitment to India's vision for 2047, focusing on the interplay between sustainable investments and processes in shaping a sustainable and growing business future.
- REC has emerged as a significant player in India's clean energy transition, actively contributing to the nation's sustainable future.

6. CATEGORIZATION OF ENERGY DRINKS

- The Food Safety and Standards Authority of India (FSSAI) has recently issued a directive calling all E-Commerce companies to appropriately categorize beverage drinks.

- The FSSAI refrains E-Commerce platforms from referring to cereal based, dairy based or malt based beverages as "Energy Based Drinks" or "Health Drinks". Within the perspective of the countries food laws, the directive seeks the correct and relevant definition of "Health Drinks".
- FSSAI entails food safety on the lines of handling mechanisms, preparation processes, and storage facilities in methods that prevent the onset of food borne illnesses.
- Beverages and bars are also hereby included in advisories to comply with these food standards.

7. CHANGPA TRIBE

- Climate activist Sonam Wangchuk and Leh Apex Body (LAB) decided to call off the Pashmina border march aimed at highlighting the plight of the Changpa nomadic tribes.
- The Changpa, or Champa, are semi-nomadic people found mainly in the Changtang plateau of southeastern Ladakh.
- They share linguistic and cultural affinities with Tibetans.
- All Changpa families profess Tibetan Buddhism as their religion.
- They are high-altitude pastoralists, raising mainly yaks and goats.

- Each reboo invariably accommodates the family deity, and a picture of their spiritual head, in most cases, the Dalai Lama.
- The Changpa who live nomadic lives are known as Phalpa, while those who have settled down in fixed locations are called Fangpa.
- For many Changpas, rearing of animals and consuming and selling their produce (milk and its products, hair, and meat) are the only means of livelihood.
- Their Buddhist belief does not allow them to kill animals for meat. It is only when animals die a natural death that the carcasses can be used for meat and hide, which the Changpas use to line their huts and make garments.

8. DEATH ANNIVERSARY OF MANGAL PANDEY

- The death anniversary of Mangal Pandey, who played a significant role in Sepoy Mutiny of 1857, is celebrated on April 8 every year.
- Mangal Pandey is considered the hero of the first war of Independence, also known as the Sepoy Mutiny of 1857.
- He was born on July 19, 1827 near Faizabad in Uttar Pradesh.
- In 1849, Pandey joined the army of the British East India Company and served as a sepoy in the 6th Company of the 34th Bengal Native Infantry in Barrackpore.
- He revolted against the East India Company for introducing cartridges that were greased with animal fat as it hurt the religious sentiments of the soldiers.
- On March 29, 1857, Pandey mutinied and fired at his Senior Sergeant Major.
- He was overpowered and hanged on April 8, 1857, by the order of a Court Martial at Lal Bagan in Barrackpore.
- His regiment was disbanded, like the 19th infantry at Behrampore, for showing resentment.

9. HIGGS BOSON : NOBEL PRIZE-WINNING BRITISH PHYSICIST DIED

- Nobel prize-winning British physicist Peter Higgs, who proposed the existence of a mass-giving particle, which became known as the Higgs boson or the "God particle", has died aged 94.
- The Higgs boson is the fundamental force-carrying particle of the Higgs field, which is responsible for granting fundamental particles their mass.
- This field was first proposed in the mid-sixties by Peter Higgs, for whom the particle is named.
- The particle was finally discovered in 2012, by researchers at the Large Hadron Collider (LHC), the most powerful particle accelerator in the world, located at the European particle physics laboratory CERN, Switzerland.
- The LHC confirmed the existence of the Higgs field and the mechanism that gives rise to mass and thus completed the standard model of particle physics.
- It is one of the 17 elementary particles that make up the Standard Model of particle physics, which is scientists' best theory about the behaviours of the universe's most basic building blocks.
- Higgs boson plays such a fundamental role in subatomic physics that it is sometimes referred to as the "God particle."
- The Higgs boson has a mass of 125 billion electron volts, meaning it is 130 times more massive than a proton.
- It is also chargeless with zero spin, a quantum mechanical equivalent to angular momentum.
- It is the only elementary particle with no spin

10. STATUS OF TOTAL FERTILITY RATE (TFR)

- India's declining fertility rate, recently projected by The Lancet, suggests a demographic transition with potential economic benefits.
- TFR in India has drastically decreased from 6.2 in 1950 to below 2 in 2021.
- It is projected to further decline to 1.29 by 2050 and a concerning level of 1.04 by 2100.
- This decline is part of a global trend, with the global fertility rate dropping nearly 50% in the past 70 years.
- The United Nations predicts global population growth to reach 10.9 billion by 2100, with TFR converging to near replacement level.
- The Total Fertility Rate (TFR) of 2.0 in India signifies stable long-term population trends,

with two parents replaced by two children, indicating that the country may not experience population decline for 30-40 years due to a substantial youth population.

About TFR

- The Total Fertility Rate (TFR) represents the average number of children a woman would have in her lifetime given current fertility rates.
- A TFR of 2.1 signifies replacement-level fertility, where each generation replaces itself. TFR below 2.1 suggests a declining population over time as each generation produces fewer children than its predecessor.

11. GLACIAL LAKE OUTBURST FLOODS

- The Uttarakhand government has constituted two teams of experts to evaluate the risk posed

by five potentially hazardous glacial lakes in the region.

- These lakes are prone to Glacial Lake Outburst Floods (GLOFs), the kind of events that have resulted in several disasters in the Himalayan states in recent years.
- The National Disaster Management Authority (NDMA), which operates under the Union Ministry of Home Affairs, has identified 188 glacial lakes in the Himalayan states that can potentially be breached because of heavy rainfall.
- Thirteen of them are in Uttarakhand.
- Glacial Lake Outburst Floods are disaster events caused by the abrupt discharge of water from glacial lakes large bodies of water that sit in front of, on top of, or beneath a melting glacier.
- As a glacier withdraws, it leaves behind a depression that gets filled with meltwater, thereby forming a lake.
- The more the glacier recedes, the bigger and more dangerous the lake becomes.
- Such lakes are mostly dammed by unstable ice or sediment composed of loose rock and debris.
- In case the boundary around them breaks, huge amounts of water rush down the side of the mountains, which could cause flooding in the downstream areas — this is referred to as a GLOF event.
- GLOFs can be triggered by various reasons, including glacial calving, where sizable ice chunks detach from the glacier into the lake, inducing sudden water displacement.
- Incidents such as avalanches or landslides can also impact the stability of the boundary around a glacial lake, leading to its failure, and the rapid discharge of water.
- GLOFs can unleash large volumes of water, sediment, and debris downstream with formidable force and velocity.
- The floodwaters can submerge valleys, obliterate infrastructure such as roads, bridges, and buildings, and result in significant loss of life and livelihoods.
- In recent years, there has been a rise in GLOF events in the Himalayan region as soaring global temperatures have increased glacier melting. Rapid infrastructure development in vulnerable areas has also contributed to the spike in such incidents.

12. TORNADO

- A tornado hit the Mainaguri area of Jalpaiguri district in West Bengal.
- The tornado hit caused significant destruction, resulting in the tragic loss of five lives and injuring over 300 people.
- A tornado is a violently rotating column of air that forms a connection between the surface of the Earth and a cumulonimbus cloud (or, in rare cases, the base of a cumulus cloud).
- Tornadoes are funnel-shaped storms with very low pressure at the center.
- They are the smallest but most violent and disastrous of all the storms.
- Tornadoes generally occur in middle latitudes.
- Steep pressure gradients result in fast movement of air towards the center.

SPECIES IN NEWS

1. CNEMASPIS VANGOGHI

- Scientists in India recently discovered a new species of lizard named Cnemaspis vangoghi.

- Cnemaspis vangoghi is a new species of lizard discovered from the Southern Western Ghats in Tamil Nadu.
- It is named for Dutch painter Vincent Van Gogh (1853–1890), as the striking colouration of the new species is reminiscent of one of his most iconic paintings, The Starry Night.
- It is described as a small-sized gecko and has a distinctive yellow head and forebody, adorned with light blue spots on the back.
- It prefers living among rocks and can occasionally be found on buildings and trees.
- Both species inhabit low-elevation, deciduous forests within the Srivilliputhur-Megamalai Tiger Reserve, adding to the five previously known endemic vertebrates of the region.
- These diurnal creatures are mainly active during the cooler hours of early morning and evening, predominantly found on rocks.

2. CONSERVATION OF THE CARACAL SPECIES

- Caracal is an elusive, primarily nocturnal animal which has traditionally been valued for

its litheness and extraordinary ability to catch birds in flight. In India, it is called siya gosh, a Persian name that translates as 'black Ear'.

- They typically use abandoned porcupine burrows and rock crevices for maternal dens, but can be found with their young in dense vegetation.
- The most suitable habitat for caracals in Rajasthan, Gujarat and Madhya Pradesh is located in Kutch, the Malwa Plateau, the Aravalli hill range and the Bundelkhand region,
- It is found in several dozen countries across Africa, the Middle East, Central and South Asia.
- They live in woodlands, savannahs and in scrub forests.
- Large-scale hunting, illegal trading and loss of natural habitats are considered significant threats to the species.
- Conservation status: The Wild Life (Protection) Act, 1972: Schedule 1

3. PURPLE-STRIPED JELLYFISH

- A bloom of venomous mauve stinger or purple-striped jellyfish was reported by marine researchers across the Visakhapatnam coast.

- Purple-striped jellyfish usually appears a blue purple (mauve) colour with a globe shaped umbrella covered in orangey brown warts.
- It is primarily pelagic or in the open ocean.
- However, this species can survive in benthic and temperate coastal habitats.
- It is found worldwide in tropical and warm-temperature seas. It is mainly found in the Indo-Pacific, Atlantic Ocean and the Mediterranean Sea.
- Unlike other jellyfish species, it has stingers not just on the tentacles, but on the bell too. These are bioluminescent, having an ability to produce light in the dark.
- According to marine biologists, jellyfish blooms are reported frequently as a result of rising ocean temperatures, one of the main causes of substantial population growth.

4. SPOTTED DEER: POPULATION EXPLOSION

- The introduction of chital, or spotted deer, to the Andaman and Nicobar Islands in the early 1900s for game hunting by the British has resulted in a population explosion that now poses a significant problem for authorities.
- But now the chital population exceeding the carrying capacity of Netaji Subhash Chandra Bose Island.
- Spotted deer, also known as chital or axis deer, are a species of deer native to the Indian subcontinent.
- They are characterized by their reddish-brown coat with white spots, which gives them their name.
- Spotted deer are medium-sized herbivores, typically weighing between 50 to 100 kilograms.
- They inhabit a variety of forested habitats, including deciduous forests, grasslands, and scrublands.
- The chital, also known as the spotted deer or axis deer, is a graceful and elegant herbivore native to the grasslands and forests of India and Sri Lanka.
- They prefer open grasslands, savannas, and lightly forested areas.
  - IUCN Red list: Least Concern
  - WLPA 1972: Schedule II.

5. NEPTIS PHILYRA: RARE BUTTERFLY

- A rare butterfly species named Neptis philyra has been recently discovered for the first time in India in Tale Valley Wildlife Sanctuary.
- Neptis philyra is a rare species of butterfly, commonly known as the long-streak sailor.
- Till date, the butterfly species was known to be found across various regions of east Asia, including eastern Siberia, Korea, Japan, central and southwest China.

- The butterfly has serrated wings with rich brownish-black on the upper side and yellow-brown on the underside.
- The butterfly's distinct markings include a white cell streak forming a "hockey stick" pattern on the forewing.
- The species, which is part of the Nymphalidae family, is known to prefer habitats such as evergreen forests, riverine vegetation, and rocky streams.
- Tale Valley Wildlife Sanctuary is located near the Apatani cultural landscape in the Lower Subansiri District of Arunachal Pradesh.

6. GRAY SLENDER LORIS

- A Gray Slender Loris was rescued by forest officials in North Goa.

- Gray Slender Loris is a small primate native to India and Sri Lanka that lives in subtropical and tropical forests.
- Gray slender lorises are nocturnal hunters and foragers that use their large, forward-facing eyes to detect prey.
- They are insectivores that eat mostly ants and termites, but also eat beetles, spiders, mollusks, and other small vertebrates.
- The Gray Slender Loris is listed on the Red List of the International Union for Conservation of Nature (IUCN) and is protected under the Wildlife Protection Act of 1972.

7. LEAF LITTER FROG

- Scientists have found that Leaf Litter Frog emits ultrasonic sounds that are inaudible to humans but can scare off predators.

- Leaf Litter Frog is the most abundant species of frog in the forest community.
- It utilizes its high-frequency screams as a survival strategy.
- It inhabits primary and secondary forests and forest edges.
- It is usually found in the leaf-litter on the forest floor, or on leaves in low vegetation inside the forest.
- They are tiny and the largest of the species are females. In size, they are barely up to 64 millimeters (2.5 inches) in length.
- It is a species of frog endemic to the Brazilian Atlantic rainforest.
- Conservation status
- IUCN: Least concern

8. CLOUDED TIGER CAT: DISCOVERED

- A new species of tiger cat, the clouded tiger cat, discovered in Brazil, faces threats from deforestation and illegal hunting.
- Clouded Tiger Cat is a new species of forest-dwelling tiger cat. Its scientific name is Leopardus pardinoides
- It is found in the cloud forests of the southern Central American and Andean Mountain chains, which stretch from Costa Rica through Panama, Colombia, Peru, Bolivia, and Argentina.
- It is a long-tailed cat with short-round ears, weighing 2.27 kg.
- It has a remarkably margay-looking head, which has a nice dense soft fur of a rich reddish/orangish/grayish-yellow background color adorned with irregularly shaped medium-large 'cloudy' rosettes that are strongly marked and often coalesce.

PLACES IN NEWS

1. SCHENGEN AREA

- Romania and Bulgaria partially joined the Schengen Area, but land border checks persist due to Austrian opposition over illegal migration concerns.
- The Schengen Area, established in 1985, included 23 EU member countries, Switzerland, Norway, Iceland, and Liechtenstein before the partial inclusion of Romania and Bulgaria.
- Approximately 3.5 million people cross internal borders daily within the Schengen Area.
- Both Romania and Bulgaria, EU members since 2007, meet the technical criteria for full accession, requiring unanimous support from all member states.
- Both countries agreed to implement random security screening at airports and maritime borders to combat illegal migration and cross-border crime.

2. SYRIA

- The on-going conflict has had a significant humanitarian impact, with many Syrians displaced both internally and externally.
- The car bombing attack occurred in the town of Azaz. It holds strategic significance in the context of the Syrian civil war due to its proximity to the Turkish border and its role as a crucial supply route.
- The town is home to the Syrian Interim Government, an opposition group that claims legitimacy as the country's authority.
- Syria, officially known as the Syrian Arab Republic, is a country in West Asia located in the Eastern Mediterranean and the Levant.
- It is bounded by the Mediterranean Sea to the west, Turkey to the north, Iraq to the east and southeast, Jordan to the south, and Israel and Lebanon to the southwest.
- The capital and largest city is Damascus.

3. EREZ CROSSING: ISRAEL AND NORTHERN GAZA

- Israel has reopened the Erez crossing between Israel and northern Gaza for the first time since the October 7 Hamas attacks to allow more aid to Gaza.
- Erez (or Beit Hanoon) is located in the north of the Gaza Strip. It was the main crossing for the movement of people between Israel and Gaza.
- It is primarily a pedestrian crossing but can also be used for road supplies.
- Movement through all of Israel's crossings with Gaza was already heavily restricted before the war, as Israel imposed a blockade of the territory with Egypt 17 years ago.
- The only crossings currently operational are the Rafah crossing with Egypt and Kerem Shalom with Israel.
- Hamas is a Palestinian political armed group that was founded in 1987. It's a militant group that emerged as a resistance movement against Israeli occupation.

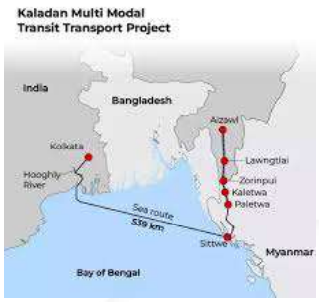
4. ENGLISH CHANNEL

- Five people died in an attempt to cross the English Channel recently, hours after Britain passed a bill to deport asylum seekers to Rwanda to try to deter the dangerous crossings.
- English Channel is a narrow arm of the Atlantic Ocean that separates the southern coast of England (part of Great Britain) from the northern coast of France.
- It is separated from the North Sea on the north by the Strait of Dover.
- Temperate maritime climate with warm summers and cold winters.
- The main islands are the Isle of Wight and the Channel Islands (a collection of islands including Jersey, Guernsey, Alderney, and Sark).
- It is one of the world's busiest shipping areas, linking southern England, to northern France.

- It accounts for up to 20% of the global maritime trade and connects the Atlantic Ocean to the North Sea.

5. INDIA GAINS SITTWE PORT ACCESS

- The Ministry of External Affairs (MEA) has approved a proposal for India Ports Global Ltd (IPGL) to take over the operations of the entire Sittwe port located on the Kaladan River, Myanmar. It will be India's 2nd overseas port after Chabahar Port.



- IPGL is a company 100% owned by the Ministry of Ports, Shipping and Waterways.
- The Sittwe Port, located in the Rakhine State of Myanmar, is a crucial component of the Kaladan multi-modal transit transport project.
- The deep-water port offers a significant connectivity advantage for cargo to reach from Vizag and Kolkata to the Northeastern states, bypassing Bangladesh.
- It will also reduce dependency on the Siliguri Corridor (or the chicken's neck) squeezed between Bhutan and Bangladesh.
- India's operational control over these 2 overseas ports, Chabahar and Sittwe, will strengthen India's maritime influence to counter China's String of Pearls policy with ports like Hambantota in Sri Lanka, Djibouti in Africa, etc.

PRACTICE QUESTIONS

1. What is the primary purpose of the Suvidha Portal developed by the Election Commission of India?

a) To facilitate online voter registration

b) To provide election-related news and updates

c) To streamline the process of obtaining permissions and facilities for political parties and candidates during elections

d) To conduct exit polls after the elections

2. What is the nature of funding winter in the context of the start-up ecosystem?

a) A period of high investment and rapid growth

b) A cyclical effect resulting in decreased capital inflow and lower valuations

c) A steady increase in funding opportunities for start-ups

d) A temporary pause in market activities with no significant impact on funding

3. What triggers global mass coral bleaching events, as reported by the US National Oceanic and Atmospheric Administration (NOAA)?

a) Pollution levels in the ocean

b) Extraordinary ocean temperatures

c) High levels of ocean acidity

d) Changes in coral reef structures

4. What is the primary objective of the Intergovernmental Negotiating Committee (INC) on Plastic Pollution?

a) To promote plastic production and design

b) To develop international guidelines for plastic disposal

c) To establish a global framework of standards addressing the full life cycle of plastic

d) To enforce import/export restrictions on plastic materials

5. Which ministry is the nodal ministry for BISAG, the organization that developed the INDRRA app?

a) Ministry of Defence

b) Ministry of Earth Sciences

c) Ministry of Electronics & Information Technology (MeitY)

d) Ministry of Science and Technology

6. Which site boasts a massive Linga carved from a single stone and is dedicated to Lord Shiva?

a) Gwalior Fort

b) Historical Group of Dhamnar

c) Bhojeshwar Mahadev Temple

d) Rock Art Sites of Chambal Valley

7. What is a notable survival strategy of the Leaf Litter Frog?

a) Emitting ultrasonic sounds audible to humans

b) Camouflaging itself in tree bark

c) Emitting ultrasonic sounds inaudible to humans to scare off predators

d) Hopping quickly to evade predators

8. Which two countries partially joined the Schengen Area, facing opposition over land border checks due to concerns regarding illegal migration?

a) Romania and Austria

b) Bulgaria and Switzerland

c) Romania and Bulgaria

d) Liechtenstein and Norway

9. What is the primary objective of the PRATUSH mission?

a) To study the geology of the moon's far side

b) To search for signs of extraterrestrial life on the moon

c) To deploy a high-resolution optical telescope on the moon

d) To detect signals from the first stars and galaxies, shedding light on the cosmic dawn of the universe

10. Who is developing the Akashteer Command and Control Systems as part of the 'AtmaNirbhar Bharat' initiative?

a) Bharat Electronics Limited (BEL)

b) Indian Space Research Organisation (ISRO)

c) Defence Research and Development Organisation (DRDO)

d) Hindustan Aeronautics Limited (HAL)

ANSWER KEY

1	2	3	4	5
(c)	**(b)**	**(b)**	**(c)**	**(c)**
6	7	8	9	10
(c)	**(c)**	**(c)**	**(d)**	**(a)**

TOPIC OF THE MONTH

DIGITALISATION OF AGRICULTURE IN INDIA

Context: The Union Government has inaugurated the Agriculture Integrated Command and Control Center.

The digitalization of agriculture in India refers to the integration of cutting-edge digital technologies into various aspects of agricultural practices and processes. This transformation aims to enhance productivity, efficiency, sustainability, and profitability in the agricultural sector. Digitalization of agriculture in India holds immense potential to transform the sector, improve farmer livelihoods, enhance food security, and contribute to sustainable development. By leveraging digital technologies and fostering an enabling ecosystem, India can unlock new pathways for agricultural growth and innovation.

INTEGRATED COMMAND AND CONTROL CENTER.

- **Aim:** To empower the farmers by equipping them with information, services and facilities using digital technology.
- **Multifunctional Centre:** At the Command Centre, it will be possible to see all the digital innovations being made in the agriculture sector by the Ministry of Agriculture and Farmers' Welfare on a big screen simultaneously at one place.

KEY COMPONENTS OF DIGITAL INFRASTRUCTURE IN AGRICULTURE

1. **Artificial Intelligence (AI)**
    - AI technologies are used in agriculture to analyze data from various sources such as sensors, drones, and satellites to provide insights and recommendations for optimizing farming practices.
    - AI-powered systems can assist farmers in decision-making related to crop management, pest control, irrigation scheduling, and resource allocation.
2. **Robotics**
    - Robotics technology is utilized in agriculture for tasks such as planting, harvesting, weeding, and spraying pesticides.
    - Agricultural robots can perform repetitive and labor-intensive tasks with precision and efficiency, reducing the need for manual labor and improving productivity.
3. **Uncrewed Aviation Systems (UAS)**
    - Uncrewed aviation systems, commonly known as drones, are increasingly being used in agriculture for crop monitoring, mapping, and spraying.
    - Drones equipped with cameras and sensors can collect high-resolution imagery and data, allowing farmers to assess crop health, detect pests and diseases, and optimize field management practices.
4. **Sensors**
    - Sensor technologies play a crucial role in digital agriculture by collecting data on various environmental parameters such as soil moisture, temperature, pH, nutrient levels, and crop growth stages.
    - These sensors provide real-time monitoring and feedback, enabling farmers to make data-driven decisions and optimize resource use.

5. **Communication Networks**
    - Reliable communication networks, including wireless internet connectivity and mobile networks, are essential for transmitting data between sensors, devices, and centralized management systems in agricultural settings.
    - These networks facilitate remote monitoring, control, and communication, enabling farmers to manage their operations more effectively.

ROLE OF DIGITAL PUBLIC INFRASTRUCTURE FOR AGRICULTURE IN INDIA

1. **Assessing Soil Health**
    - Digital infrastructure enables farmers to assess soil health through technologies such as soil sensors, remote sensing, and unmanned aerial surveying.
    - These tools provide valuable insights into soil properties, nutrient levels, moisture content, and other factors critical for crop growth.
    - By understanding soil health conditions at different production levels, farmers can make informed decisions regarding fertilization, irrigation, and crop selection, leading to improved yields and resource utilization.
2. **Improving Crop Yield with AI/ML**
    - Artificial intelligence and machine learning algorithms play a crucial role in leveraging data collected from various sources, including sensors, satellites, and weather forecasts, to generate real-time actionable insights for farmers.
    - These algorithms analyze large datasets to identify patterns, predict crop yields, detect pest infestations, and optimize farming practices.
    - By harnessing the power of AI/ML, farmers can make data-driven decisions to enhance crop yield, mitigate risks, and reduce their workload.
3. **Blockchain Technology for Traceability**
    - Blockchain technology offers a secure and transparent way to record and track agricultural data, including farm inputs, inventories, transactions, and supply chains.
    - By leveraging blockchain, stakeholders in the agricultural ecosystem can ensure the integrity and authenticity of data, facilitate quick and secure transactions, and enable traceability from farm to fork.
    - This helps in building trust among consumers, improving food safety, and enhancing market access for farmers.

KEY ADVANTAGES OF DIGITAL INFRASTRUCTURE IN AGRICULTURE

1. **Increasing Agriculture Productivity and Lowering Production Costs**
    - Digital agriculture enables farmers to make data-driven decisions, optimize resource allocation, and adopt precision farming techniques.
    - This leads to increased productivity through better crop management practices while simultaneously reducing input costs such as water, fertilizers, and pesticides.
2. **Inhibition of Soil Degradation**
    - By utilizing technologies like soil sensors and remote sensing, farmers can monitor soil health parameters more effectively.
    - This allows for targeted interventions to prevent soil erosion, improve soil fertility, and promote sustainable land management practices, thereby inhibiting soil degradation.

3. **Lessening of Chemical Application in Crop Production**
    - Precision agriculture techniques, aided by digital technologies, enable farmers to apply agrochemicals such as fertilizers and pesticides more judiciously.
    - By precisely targeting areas in need of treatment and optimizing application rates, digital agriculture helps minimize chemical usage, reducing environmental pollution and promoting ecological balance.
4. **Promoting Effective and Efficient Use of Water Resources**
    - Digital tools like soil moisture sensors, weather forecasting models, and irrigation scheduling algorithms assist farmers in optimizing water usage.
    - By providing real-time data on soil moisture levels and weather conditions, digital agriculture helps farmers schedule irrigation more efficiently, leading to water conservation and improved water use efficiency.
5. **Uplifting Socio-economic Statuses of Farmers**
    - Digital agriculture can empower farmers by providing access to market information, financial services, and extension support through digital platforms.
    - By connecting farmers with markets, enabling digital payments, and offering advisory services, digital agriculture contributes to enhancing farmer incomes, livelihoods, and overall socio-economic well-being.
6. **Reducing Environmental and Ecological Impacts**
    - By promoting sustainable farming practices and reducing reliance on chemical inputs, digital agriculture helps mitigate environmental pollution, soil erosion, and biodiversity loss.
    - Adopting conservation agriculture techniques facilitated by digital technologies contributes to preserving natural resources and promoting environmental sustainability.
7. **Augmenting Worker Safety**
    - Automation and robotics in agriculture reduce the need for manual labor in hazardous tasks such as pesticide spraying and harvesting.
    - By replacing human labor with autonomous machines, digital agriculture enhances worker safety and reduces occupational health risks associated with agricultural activities.

KEY CHALLENGES IN DIGITAL INFRASTRUCTURE IN AGRICULTURE

1. **Limited Digital Infrastructure**
    - Rural areas often lack essential digital infrastructure such as reliable internet connectivity and electricity supply.
    - Without access to these basic amenities, farmers are unable to leverage digital technologies effectively, hindering the adoption of digital agriculture solutions.
2. **Digital Divide**
    - There exists a significant disparity in access to digital technology between urban and rural areas in India. While urban centers have better access to digital infrastructure and resources, rural communities often lack such access. This digital divide exacerbates inequalities and limits the reach of digital agriculture initiatives to rural farmers.
3. **Cost of Technology**
    - Many digital agriculture solutions require significant investments in hardware, software, and infrastructure, making them unaffordable for smallholder farmers with limited financial resources.
    - The high upfront costs associated with adopting digital technologies act as a barrier to entry for small and marginal farmers, preventing them from reaping the benefits of digital agriculture.
4. **Fragmented Agriculture Sector**

- India's agriculture sector is highly fragmented, with a large number of smallholder farmers cultivating diverse crops across different regions.
- This diversity presents a challenge in developing digital solutions that cater to the specific needs and requirements of farmers across various crops, regions, and agro-climatic zones.

5. **Capacity Building**
   - Training farmers to effectively use digital tools and interpret the data generated is crucial for the successful implementation of digital agriculture.
   - However, many farmers lack the necessary digital literacy and skills to adopt and utilize digital technologies effectively.
   - Capacity building initiatives are needed to provide farmers with training and support to harness the full potential of digital agriculture solutions.

KEY GOVERNMENT INITIATIVES

1. **India Digital Ecosystem of Agriculture (IDEA)**
   - IDEA is a framework aimed at establishing a federated farmers' database and promoting innovative agricultural solutions using emerging technologies.
   - It facilitates collaboration between various stakeholders and encourages the adoption of digital technologies to enhance the agricultural ecosystem.
2. **National e-Governance Plan in Agriculture (NeGP-A)**
   - NeGP-A allocates funds to states and union territories for implementing projects involving modern technologies such as artificial intelligence (AI), machine learning (ML), robotics, drones, data analytics, and blockchain in agriculture.
   - These initiatives aim to digitize agricultural processes and improve efficiency and productivity in the sector.
3. **National Agriculture Market (e-NAM)**
   - e-NAM is a pan-India electronic trading portal that connects Agricultural Produce Market Committee (APMC) mandis to create a unified national market for agricultural commodities.
   - It provides digital services to traders, farmers, and mandis, facilitating transparent and efficient trading of agricultural produce.
4. **PM KISAN Scheme**
   - The PM KISAN Scheme entails the direct transfer of funds to eligible farmers' bank accounts under the Direct Benefit Transfer (DBT) mode.
   - Farmers can self-register through the Farmers Corner portal or a dedicated mobile app, ensuring broader access to financial assistance and support.
5. **Integrated Scheme for Agricultural Marketing (AGMARKNET)**
   - AGMARKNET supports the creation of agricultural marketing infrastructure by providing backend subsidy support.
   - It offers services through the AGMARKNET portal to stakeholders including farmers, industry, and policymakers, facilitating transparent and efficient agricultural marketing practices.
6. **Mobile Apps by ICAR**
   - The Indian Council of Agricultural Research (ICAR), along with State Agricultural Universities and Krishi Vigyan Kendras, has developed more than 100 mobile apps.
   - These apps provide valuable information to farmers on various aspects of agriculture, including crops, horticulture, veterinary, dairy, poultry, fisheries, and natural resources management, empowering them with knowledge and resources for better decision-making.

WAY FORWARD

- Portable Hardware: Agricultural land leasing is broadly prevalent under several farming arrangements, thus a farmer farming on a specific plot of land may move to another farm plot next season.

- Renting and sharing platforms for agriculture equipment and machinery: Owing to both small farm plots and constrained financial resources, the opportunity exists for digital platforms that are offering equipment renting and sharing services rather than outright purchases.
- Academic support: Training facilities offered by various academic institutes and agricultural organizations will be improving digital adoption among farmers

MAINS PRACTICE

How does e-Technology help farmers in production and marketing of agricultural produce? Explain it. UPSC Main 2023

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