INSIGHTSIAS

SIMPLIFYING IAS EXAM PREPARATION

AURORA BOREALIS

ON OCTOBER 10, 2024, LEH, LADAKH EXPERIENCED A RARE DISPLAY OF AURORA BOREALIS, OR NORTHERN LIGHTS, DUE TO A SEVERE GEOMAGNETIC STORM TRIGGERED BY A CORONAL MASS EJECTION (CME) FROM THE SUN.

7 OCT - 12 OCT 2024

WEEKLY CURRENT AFFAIRS

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CONTENT FOR MAINS ENRICHMENT

FACTS FOR PRELIMS

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GENERAL STUDIES – 2

Topics: Structure, organization and functioning of the Executive and the Judiciary; Ministries and Departments of the Government; pressure groups and formal/informal associations and their role in the Polity.

1. CASTEISM IN PRISON

Context:

The **Supreme Court** on October 3 declared caste-based labour assignments in prisons as **"unconstitutional"**, striking down provisions in State prison manuals across more than 10 states, including **Uttar Pradesh, Tamil Nadu, and Kerala**.

- The court highlighted that assigning menial jobs like cleaning to marginalized castes while reserving cooking for higher castes violates **Articles 14 (Right to Equality), 15 (Prohibition of discrimination), 17 (Abolition of untouchability)**, and **23 (Prohibition of forced labour)** of the Constitution.

Key issues identified in prison manuals:

- **Caste-based discrimination:** Manuals still include discriminatory rules that segregate prisoners based on caste, assigning specific duties based on social hierarchies.
  E.g. The separation of **Thevars, Nadars, and Pallars** in Tamil Nadu prisons.
- **Colonial legacy:** Prison rules continue to categorize members of **denotified tribes** as "habitual offenders" or "born criminals," perpetuating colonial-era stereotypes.
- **Labor segregation:** Specific tasks are assigned based on caste, such as Brahmins being given cooking duties while marginalized castes are assigned cleaning and manual labor roles.

Current status of Indian prisons:

- **Overcrowding:** Indian prisons operate at **117% capacity**, with a significant proportion of inmates being under-trial prisoners.
- **Poor conditions:** Lack of hygiene, inadequate medical facilities, especially for women, and reports of **custodial torture** persist.
- **Judicial delays:** Prolonged trials and a lack of access to legal aid hinder timely justice for inmates.

Legal framework governing prisons:

- **Articles 14, 15, 17, and 23:** These constitutional provisions prohibit discrimination, untouchability, and forced labor, ensuring equality and dignity for all.
- **Model Prison Manual (2016) and Model Prisons and Correctional Services Act (2023):** Criticized for retaining vague definitions of "habitual offenders" and failing to fully eliminate caste-based discrimination.
- **Prisons Act, 1894:** The primary legislation governing prison administration in India.

Consequences of caste-based discrimination in prisons:

- **Violation of fundamental rights:** Caste-based labor assignments undermine inmates' dignity, equality, and human rights.
- **Perpetuation of social inequality:** Reinforces social hierarchies, stigmatizing marginalized communities even within prison walls.
- **Obstruction to reformation:** Caste-based assignments restrict personal growth and rehabilitation opportunities for marginalized inmates.

Way ahead for prison reforms:

1. **Amend prison manuals:** Ensure that all states and Union Territories update prison rules to eliminate discriminatory practices within the next three months.
2. **Legal framework enhancement:** Incorporate provisions from the **Prohibition of Employment as Manual Scavengers and their Rehabilitation Act, 2013** into the prison manual.
3. **Regular inspections:** District legal services authorities and boards of visitors should conduct periodic inspections to identify and rectify any biases.
4. **Awareness and sensitization:** Train prison staff on the principles of equality and non-discrimination to promote inclusive prison practices.
5. **Judicial oversight:** Encourage adherence to guidelines laid out in landmark judgments like **Arnesh Kumar Vs. State of Bihar (2014)** for the protection of prisoners' rights.

Conclusion

The SC's judgment marks a significant step toward reforming India's prison system by rooting out caste-based discrimination. Moving forward, strict adherence to constitutional principles and reforms in prison administration will be essential to safeguard the dignity and rights of all inmates.

Insta Links:

1. Model-prisons-act-2023
2. Prison-Reforms-in-India

PYQ:

1. "Caste system is assuming new identities

and associational forms. Hence caste system cannot be eradicated in India." Comment. (UPSC-2018)

2. What are the two major legal initiatives by the State since Independence addressing discrimination against Scheduled Tribes (STs)? (UPSC-2017)

Topics: Important aspects of governance, transparency and accountability, e-governance applications, models, successes, limitations, and potential; citizens charters, transparency & accountability and institutional and other measures.

2. GLOBAL DIGITAL COMPACT

Context:

The Global Digital Compact (GDC), adopted during the **UN's 'Summit of the Future,'** focuses on harnessing digital technologies for the common good while promoting sustainable development and responsible data governance.

- It **aims** to address challenges like the **digital divide, data privacy, and ethical AI use.**

Key points on Global Digital Compact (GDC):

- **Nature:** The GDC is a non-binding diplomatic instrument aiming to guide governments, institutions, and stakeholders in digital technology use and governance. Over time, its guidelines could evolve into soft laws.
- **Core objectives:** Promotes global cooperation in technology governance based on international laws, the Universal Declaration of Human Rights, and the UN 2030 Agenda, emphasizing inclusive participation, sustainability, and responsible data governance.
- **Digital public goods:** Advocates for the development of digital public infrastructure, including open-source software, data, and AI models, to bridge the digital divide and support sustainable development goals (SDGs).
- **Panels established:** Two panels have been set up: an Independent International Scientific Panel on AI and a Global Dialogue on AI Governance, aimed at guiding responsible AI use and innovation.
- **Challenges and criticisms:**
    1. **Public-private partnerships:** The openness of such partnerships may be limited by confidentiality and intellectual property concerns.
    2. **Self-regulation:** Relies on tech companies to self-regulate, which has been ineffective in curbing misuse of digital platforms.
    3. **Data governance:** Emphasizes interoperable data systems but lacks robust personal data protection measures.
    4. **Monopoly risks:** Calls for greater corporate involvement in data governance without sufficient countermeasures against monopolistic control.
- **Alignment with SDGs:** Links digital technology advancements with SDGs, highlighting their potential role in achieving these goals, though recognizing the challenges posed by the rapidly evolving AI landscape.

Aspect	Significance
Openness in Partnerships	Promotes collaboration between public and private sectors to develop digital public goods.
Self-regulation	Encourages ethical technology use and accountability among digital technology firms.
Data Governance	Aims to create interoperable data systems for innovation and economic growth.
Monopolistic Control	Focuses on equitable access to data and technologies for sustainable development.
Implementation	Serves as a foundation for future international laws and regulations in digital technology governance.

UN's role: Positions the UN as a central figure in digital governance, advocating for "data flow with trust," although some nations resist this concept due to digital sovereignty concerns.

- **Global cooperation needed:** Emphasizes the necessity for multilateral and regional negotiations in addition to the GDC to address varied jurisdictional and local needs effectively.

Insta Links:

1. Artificial-intelligence-and-its-significance
2. Digital-public-goods

PYQ:

1. With the present state of development, Artificial Intelligence can effectively do which of the following? (UPSC - 2020)
    1. Bring down electricity consumption in industrial units
    2. Create meaningful short stories and songs
    3. Disease diagnosis
    4. Text-to-Speech Conversion
    5. Wireless transmission of electrical energy

Select the correct answer using the code given below:
(a) 1, 2, 3 and 5 only
(b) 1, 3 and 4 only
(c) 2, 4 and 5 only
(d) 1, 2, 3, 4 and 5

Answer: b)

Topics: India and its neighbourhood- relations.

3. INDIA – MALDIVES

Context:

As Prime Minister Narendra Modi met President Muizzu in New Delhi, India decided to extend support in the form of INR 30 billion and USD 400 million as part of a bilateral currency swap agreement, instrumental in tackling the ongoing financial challenges faced by the Maldives.

Background on India-Maldives relations:

1. **Political Relations:** India and Maldives share a history of close ties, with India often acting as a first responder during crises, such as the water crisis in Malé (2014) and the COVID-19 pandemic.
2. **Economic Cooperation:** India has provided significant financial aid to Maldives, including budgetary support and currency swap agreements, to help stabilize the Maldivian economy.
3. **Security Partnership:** Defense and maritime cooperation have been key areas, with joint efforts to counter terrorism, piracy, and drug trafficking in the Indian Ocean Region.
4. **Historic Ties:** Diplomatic relations date back to 1965, with strong people-to-people and cultural connections that have been built over decades.

Recent agreements:

1. **Financial support:** India extended a $400 million currency swap agreement and INR 30 billion to aid Maldives' economic challenges.
2. **Free trade agreement:** Discussions initiated to boost trade and economic ties between the two countries.
3. **Defense cooperation:** Agreements on defense infrastructure upgrades, provision of radar systems, and enhancing MNDF's surveillance and maritime capabilities.
4. **Development projects:** Support for social housing, the Greater Malé Connectivity Project, and the development of ports and airports.

Significance of the pact:

1. **Strengthening bilateral ties:** The agreements cement India's role as a strategic partner in Maldives' development and security.
2. **Maritime security:** Enhances India's influence in the Indian Ocean, contributing to regional stability and security.
3. **Economic stability:** Financial aid and economic agreements aim to stabilize Maldives' economy and boost bilateral trade.
4. **Defence collaboration:** Upgrading defense capabilities in Maldives bolsters regional defense against common threats like terrorism and piracy.

Challenges:

1. **Political instability:** The recent anti-India sentiment in Maldives and fluctuating political alliances could affect bilateral relations.
2. **China's influence:** Growing Chinese investments in Maldives could counterbalance India's strategic interests in the region.
3. **Debt dependency:** Maldives' heavy reliance on external financial aid poses risks of economic instability and dependency.
4. **Environmental concerns:** Rising sea levels and environmental issues could hinder long-term developmental projects in Maldives.

Way Ahead:

1. **Enhanced diplomatic engagement:** Continued high-level political exchanges to address challenges and strengthen relations.
2. **Diversified investments:** Focus on sustainable projects in renewable energy, tourism, and blue economy to reduce Maldives' economic vulnerabilities.
3. **Maritime security framework:** Collaborate on initiatives like the One Sun One World One Grid for energy security in the Indian Ocean Region.
4. **Public diplomacy:** Strengthen people-to-people ties through cultural, educational, and medical cooperation to build goodwill.

Insta Links:
1. India - Maldives
2. Strategic-importance

PYQ:
1. Discuss the political developments in the Maldives in the last two years. Should they be of any cause for concern to India? (UPSC-2013)

4. INDIA – ASEAN

Context:

Prime Minister Narendra Modi called 21st century as the century of India and ASEAN nations, adding that the INDIA-ASEAN friendship was important at a time when parts of the world are facing conflicts and tensions.

Recent Summit

- **Host:** The summit was held in Vientiane, Laos, with leaders from all 10 ASEAN member states attending.
- **Key Prelims Facts:**
  - 21st ASEAN – India summit.
  - ASEAN consists of 10 nations—Indonesia, Thailand, Singapore, Philippines, Vietnam, Malaysia, Myanmar, Cambodia, Brunei, and Laos.
  - The summit focused on political stability and promoting peace in the Indo-Pacific region, specifically addressing issues related to the South China Sea.

Modi's 10-Point Program:

1. **ASEAN-India Year of Tourism (2025):** India will allocate USD 5 million for joint activities promoting tourism.
2. **Celebrating Act East Policy:** Focus on youth summits, start-up festivals, hackathons, and cultural exchanges.
3. **Women scientists conclave:** Organize events under the ASEAN-India Science and Technology Development Fund.
4. **Scholarship expansion:** Doubling scholarships at Nalanda University and new ones for ASEAN students.
5. **Trade agreement review:** Plan to review the ASEAN-India Trade in Goods Agreement by 2025.
6. **Disaster resilience:** USD 5 million allocated for enhancing disaster resilience.
7. **Health Ministers' track:** Initiate health resilience measures and cooperation.
8. **Cyber policy dialogue:** Regular dialogues on cybersecurity to strengthen digital resilience.
9. **Workshop on green hydrogen:** Focus on sustainable energy and environmental technology.
10. **Plant a Tree for Mother Campaign:** Inviting ASEAN leaders to participate in a green initiative to build climate resilience.

ASEAN – India Cooperation in various fields:

- **Political:** Collaborative frameworks on maritime security in the Indo-Pacific, with initiatives like joint naval drills and anti-piracy operations to safeguard regional waters.
- **Historical and cultural:** Organizing annual ASEAN-India cultural exchange programs and think-tank dialogues to deepen ties and address shared historical narratives.
- **Economic:** Review of the ASEAN-India Trade in Goods Agreement to streamline tariffs, boost exports, and enhance economic integration in key sectors like IT and textiles.
- **Social:** Launch of specific youth-centric initiatives, such as scholarships at Nalanda University, to foster educational ties and skill development among ASEAN nations.
- **Defense:** Increased focus on defense technology transfers, cyber defense collaborations, and joint military training exercises to enhance strategic readiness.

Limitations:

- **South China sea disputes:** China's territorial claims in the South China Sea conflict directly with those of ASEAN nations like Vietnam and the Philippines, hindering regional unity.
- **Myanmar crisis:** ASEAN's lack of a strong, unified stance on Myanmar's political instability undermines its credibility in handling internal conflicts.
- **Economic imbalances:** Vast income and development gaps between member nations, like Singapore and Cambodia, limit cohesive economic growth strategies.
- **Chinese influence:** Heavy dependence on

Chinese investments in infrastructure projects like ports and railways compromises ASEAN's ability to assert its strategic autonomy.

Conclusion:

India's engagement with ASEAN symbolizes its commitment to a cooperative and inclusive Indo-Pacific region. Strengthening diplomatic, economic, and cultural ties with ASEAN nations will help promote peace, stability, and prosperity in the region. **The 10-point program lays a solid foundation for deeper collaboration, mutual respect,** and shared growth.

Insta Links:

1. Significance-of-ASEAN-for-India

PYQ:

1. The term 'Regional Comprehensive Economic Partnership' often appears in the news in the context of the affairs of a group of countries known as (UPSC-2016)
   a) G20
   b) ASEAN
   c) SCO
   d) SAARC

   Answer: b)

2. In the Mekong-Ganga Cooperation, an initiative of six countries, which of the following is/are not a participant / participant? (UPSC-2015)
   1. Bangladesh
   2. Cambodia
   3. China
   4. Myanmar
   5. Thailand

   Select the correct answer using the code given below:
   a) 1 only
   b) 2, 3 and 4
   c) 1 and 3
   d) 1, 2 and 5

   Answer: c)

3. Evaluate the economic and strategic dimensions of India's Look East Policy in the context of the post-Cold War international scenario. (UPSC-2016)

GENERAL STUDIES – 3

Topics: Indian Economy and issues relating to planning, mobilization of resources, growth, development and employment.

1. MF LITE FRAMEWORK

Context:

The Securities and Exchange Board of India (SEBI) introduced the Mutual Funds Lite (MF Lite) framework on September 30 to promote passively managed mutual fund schemes.

- This initiative aims to attract new players to the mutual fund industry, offer diversified and less risky investment opportunities for retail investors, and enhance market liquidity.

Features of MF Lite framework:

1. **Relaxed regulations:** Lower eligibility criteria for sponsors, including requirements related to net worth, track record, and profitability, to ease entry for new AMCs.
2. **Minimum net worth:** Mandates a minimum net worth of ₹35 crore for AMCs operating passive funds, ensuring adequate liquidity.
3. **Simplified governance:** Reduced oversight role for trustees in passive funds, with a focus on preventing conflicts of interest and market misconduct.
4. **Board-level operations:** Daily operational control shifted to the AMC's board to maintain transparency in fees, expenses, and tracking errors.

Need for a separate framework

1. **Lower risk profile:** Passive funds mimic index performance, making the stringent requirements of active funds unnecessary.
2. **Predictable strategy:** Tracking established indices means minimal discretion in asset allocation, lowering the need for tight regulations.
3. **Regulatory simplification:** Current regulations focus on active funds; a separate framework tailors to the unique nature of passive funds.
4. **Enhanced market participation:** Encourages new and smaller players to enter the mutual fund ecosystem, increasing diversity and competition.

Impact of the MF Lite framework:

1. **New market entrants:** Lower financial barriers and governance changes are expected to attract more AMCs, increasing competition.
2. **Increased liquidity:** More players in the market will improve overall liquidity, enhancing market stability.
3. **Cost-efficient options:** Investors benefit

from cost-effective passive funds, focusing on minimizing expenses and maximizing returns.

4. **Operational efficiency:** Shifting oversight to the AMC's board streamlines processes and boosts transparency.

Risks associated with MF Lite framework

1. **Tracking error:** Deviation from the benchmark can lead to lower-than-expected returns, impacting investor profits.
2. **Expense management:** Even with a low TER, unmanaged costs can reduce the returns of passive funds.
3. **Market volatility:** Passive funds mirror market movements, making them vulnerable to downturns without active intervention.
4. **Limited flexibility:** Lack of active management limits response to market shifts, potentially affecting performance during market instability.

Conclusion:

The MF Lite framework represents a significant step towards creating a robust, inclusive, and diversified mutual fund ecosystem in India. Adopting global best practices, focusing on investor education, and using technology for transparency will ensure sustainable growth and responsible investment opportunities in the passive mutual fund space.

Insta Links:

1. SEBI
2. SEBI-rules-to-curb-F&O

PYQ:

1. Which of the following is issued by registered foreign portfolio investors to overseas investors who want to be part of the Indian stock market without registering themselves directly? (UPSC-2019)
   (a) Certificate of Deposit
   (b) Commercial Paper
   (c) Promissory Not
   (d) Participatory Note

Answer: d)

2. INDIA TEXTILE SECTOR

Context:

The Indian textile industry, which was estimated at $153 billion in 2021, has recently faced challenges, impacting its growth and export potential. Although aiming for a $350 billion target by 2030, the industry has experienced a slump due to various economic and geopolitical factors.

Current status of the textile sector:

1. **Market size:** The Indian textile and apparel industry was valued at $153 billion in 2021, with $110 billion coming from the domestic market.
2. **Global position:** India is the third-largest textile exporter in the world, holding a 5.4% share of the global market.
3. **Employment:** The sector employs about 105 million people directly and indirectly, making it one of the largest employment generators in the country.
4. **Economic contribution:** The textile industry contributes around 2.3% to India's GDP and accounts for 10.6% of the total manufacturing Gross Value Added (GVA) as of FY23.
5. **Production clusters:** Major textile hubs like Tamil Nadu, Gujarat, and Maharashtra are crucial for spinning and garment manufacturing, with Tiruppur being a key knitwear production center.
6. **Recent performance:** FY22 saw growth with exports reaching $43.4 billion; however, there has been a notable decline in both domestic demand and exports in FY23 and FY24.

Reasons behind the slump in the textile sector:

1. **Global economic slowdown:** Geopolitical issues and reduced demand from international markets have severely impacted India's textile exports.
2. **High raw material costs:** Increased prices of cotton and Man Made Fibres (MMF) have led to higher production costs, making Indian products less competitive.
3. **Import duties:** The 10% import duty on cotton has made domestic cotton more expensive than global prices, further hampering the industry's competitiveness.
4. **Supply chain disruptions:** Quality control orders on MMF and supply chain bottlenecks have affected raw material availability and price stability.

Other challenges in the textile sector

1. **E-commerce and retail shift:** Direct retailing through e-commerce has disrupted traditional business systems, impacting small-scale manufacturers.
2. **Changing consumer preferences:** Increased demand for comfort wear and sustainable fashion has led to a decline in demand for conventional textile products.
3. **Sustainability and ESG compliance:** Foreign brands are increasingly adopting ESG (Environmental, Social, and Governance) sustainability, pressuring Indian manufacturers to meet strict compliance standards.
4. **Labour costs:** Rising labour costs in the textile sector are affecting overall production expenses, prompting the need for technological interventions to enhance productivity.

Government schemes in the textile sector:

1. **Amended Technology Upgradation Fund Scheme (ATUFS):**
   - Supports technology upgradation in textiles with financial incentives.
   - Aims to improve production capabilities and boost employment.
2. **Scheme for Integrated Textile Parks (SITP):**
   - Provides world-class infrastructure for textile units in clusters.
   - Enhances competitiveness and efficiency of the textile industry.
3. **SAMARTH Scheme (Scheme for Capacity Building in Textiles Sector):**
   - Focuses on skill development, targeting 10 lakh people in textile-related jobs.
   - Aims to bridge the skill gap in the organized and traditional sectors.
4. **Power-Tex India:**
   - Aims to strengthen the power loom sector through technology upgrades.
   - Provides subsidies for modernization and market expansion.
5. **Silk Samagra Scheme:**
   - Integrated program to promote silk production and quality improvement.
   - Supports R&D, seed production, and market promotion in the silk industry.
6. **PM-MITRA (Mega Integrated Textile Region and Apparel Parks):**
   - Aims to create world-class industrial infrastructure for the textile industry.
   - Establishes integrated textile parks to attract investments and boost exports.

Way ahead for the textile sector

1. **Policy interventions:** Remove or reduce the import duty on cotton during off-season months to stabilize raw material prices.
2. **Investment in technology:** Invest in modern technologies and innovations to improve production efficiency and reduce wastages.
3. **Skilling and workforce development:** Upskill the workforce to align with the changing demands of the global market.
4. **Sustainability initiatives:** Promote the adoption of sustainable practices in manufacturing and supply chains to meet international standards.
5. **Market diversification:** Explore new markets and diversify exports to reduce dependency on traditional markets.

Insta Links:

1. Production-linked-incentive
2. PM Mitra scheme

PYQ:

1. Consider the following statements: (UPSC - 2020)
   1. The value of Indo-Sri Lanka trade has consistently increased in the last decade.
   2. "Textile and textile articles" constitute an important item of trade between India and Bangladesh.
   3. In the last five years, Nepal has been the largest trading partner of India in South Asia.

Which of the statements given above is/are correct?

(a) 1 and 2 only
(b) 2 only
(c) 3 only
(d) 1, 2 and 3

Answer: b)

2. Analyse the factors for highly decentralized cotton textile industry in India. (UPSC - 2013)

Topics: Major crops cropping patterns in various parts of the country, different types of irrigation and irrigation systems storage, transport and marketing of agricultural produce and issues and related constraints; e-technology in the aid of farmers.

3. FRAMEWORK FOR THE FUTURE: THE NATIONAL AGRICULTURE CODE

Context:

The Bureau of Indian Standards (BIS) has begun the process of formulating a National Agriculture Code (NAC), on the lines of the existing National Building Code and National Electrical Code.

About National Agriculture Code (NAC):

- **Purpose:** Aims to standardize agricultural practices and provide guidelines for future standardization in India.
- **Structure:**
  1. **General principles:** Applicable to all crops.
  2. **Crop-specific standards:** Focuses on crops like paddy, wheat, oilseeds, and pulses.

Coverage:

- **Agricultural cycle:** Encompasses entire agricultural processes from crop selection to post-harvest operations.
- **Post-harvest operations:** Includes standards

for storage, processing, irrigation, soil and plant health management, and traceability.

- **Emerging areas:** Incorporates standards for natural farming, organic farming, and the use of Internet-of-Things (IoT) in agriculture.
- **Input management:** Provides guidelines for the use of chemical fertilizers, pesticides, and weedicides.

Objectives:

- **Standardization:** To create a national code considering agro-climatic zones, crop types, and socio-economic diversity.
- **Quality culture:** Acts as a reference for policymakers and agriculture departments to incorporate NAC into their schemes.
- **Guidance for farmers:** Serves as a comprehensive guide to aid decision-making in agricultural practices.
- **SMART farming and sustainability:** Focuses on modern farming techniques, sustainability, traceability, and documentation.
- **Capacity building:** Supports training initiatives by agriculture extension services and civil society organizations.

Implementation plan:

- **Timeline:** NAC drafting expected to be completed by October 2025.
- **Standardized Agriculture Demonstration Farms (SADF):** Experimental farms to test and implement standardized agricultural practices.
- **Training programs:** BIS plans to collaborate with universities and agricultural institutes to train farmers on NAC standards.

Significance of the National Agriculture Code (NAC):

1. **Standardization of practices:** Promotes uniform agricultural standards, enhancing productivity and ensuring best practices across diverse agro-climatic zones.
2. **Guidance for stakeholders:** Provides a comprehensive framework for farmers, policymakers, and agricultural institutions to make informed decisions in agricultural practices.
3. **Support for modern farming:** Encourages the adoption of SMART farming, sustainability, and the use of emerging technologies like IoT, improving efficiency.
4. **Capacity building:** Aids in the training of farmers and agricultural workers, empowering them with knowledge and skills to improve productivity and sustainability.

Limitations of the National Agriculture Code (NAC):

1. **Implementation challenges:** Standardizing agricultural practices across diverse regions with varying climates and soil conditions may be difficult.
2. **Adoption issues:** Farmers, especially smallholders, may face resistance or difficulty in adopting new practices due to lack of resources or awareness.
3. **Dynamic agricultural needs:** Rapidly changing agricultural trends and the emergence of new technologies might require frequent updates to the code.
4. **Infrastructure limitations:** Lack of adequate infrastructure and resources in rural areas could hinder the effective rollout and training on NAC guidelines.

Conclusion

The National Agriculture Code (NAC) represents a significant step toward modernizing and standardizing agricultural practices in India, aiming to boost productivity, sustainability, and efficiency. However, its success will depend on effective implementation, farmer adoption, and continuous updates to address evolving agricultural needs.

Insta Links:

1. Digital-agriculture-mission

PYQ:

1. In India, which of the following can be considered as public investment in agriculture? (2020)
   1) Fixing Minimum Support Price for agricultural produce of all crops
   2) Computerization of Primary Agricultural Credit Societies
   3) Social Capital development
   4) Free electricity supply to farmers
   5) Waiver of agricultural loans by the banking system
   6) Setting up of cold storage facilities by the governments

   Select the correct answer using the code given below:
   (a) 1, 2 and 5 only
   (b) 1, 3, 4 and 5 only
   (c) 2, 3 and 6 only
   (d) 1, 2, 3, 4, 5 and 6

   Answer: c)

2. Given the vulnerability of Indian agriculture to vagaries of nature, discuss the need for crop insurance and bring out the salient features of the Pradhan Mantri Fasal Bima Yojana (PMFBY). (UPSC-2016)

4. SECOND ALL INDIA RURAL FINANCIAL INCLUSION SURVEY

Context: The National Bank for Agriculture and Rural Development (NABARD) released its second All India Rural Financial Inclusion Survey (NAFIS) for 2021-22, covering one lakh rural households across India. The survey provides insights into economic and financial indicators, assessing the impact of government policies on rural development post-COVID.

Data points:

Data Category	2016-17	2021-22	Key Observations
Income Growth	Rs. 8,059 per month	Rs. 12,698 per month	57.6% increase in average monthly income. Agricultural households earn slightly more.
Expenditure Increase	Rs. 6,646 per month	Rs. 11,262 per month	Significant rise in monthly expenditure, higher for agricultural households.
Financial Savings	50.6% of households saved	66% of households saved	Higher savings rate, with agricultural households showing more savings.
Kisan Credit Card (KCC)	Not specified	44% of agricultural households	Greater uptake among households with larger landholdings.
Insurance Coverage	25.5% with insurance	80.3% with insurance	Marked increase in households with at least one insured member.
Pension Coverage	18.9% receiving pension	23.5% receiving pension	Slight improvement in households with at least one member receiving pension.
Financial Literacy	33.9% demonstrated good literacy	51.3% demonstrated good literacy	Significant rise in financial literacy and sound financial behavior.

Significance:

- **Economic growth:** Improved income and expenditure levels indicate better economic conditions for rural households, contributing to poverty reduction.
- **Enhanced financial security:** Increased savings, insurance, and pension coverage suggest improved financial resilience and security among rural populations.
- **Inclusive growth:** The rise in financial literacy and KCC adoption reflects greater access to financial services, empowering rural communities.
- **Policy impact:** Government initiatives like MGNREGS, PMAY-G, and DAY NRLM have played a vital role in boosting rural financial inclusion and socio-economic development.

Limitations:

- **Income disparities:** Despite the rise in average income, there remain significant disparities between agricultural and non-agricultural households.
- **Uneven financial access:** States like Goa, Kerala, and Gujarat show lower savings rates, indicating uneven access to financial services.
- **Insurance gaps:** Life and health insurance penetration remains limited compared to vehicle insurance, highlighting areas for improvement.
- **Pension shortfalls:** Despite improvements, a significant portion of elderly rural populations still lacks pension coverage.

Conclusion: The NAFIS 2021-22 survey highlights substantial progress in **rural financial inclusion, with improved income, savings, and financial literacy**. Continued government support and investment are crucial to sustain this momentum and ensure a prosperous future for India's rural population.

Insta Links:

1. NABARD
2. NAFIS

PYQ:

1. "In the villages itself no form of credit organization will be suitable except the cooperative society." –All India Rural Credit Survey. Discuss this statement in the background of agricultural finance in India. What constraints and challenges do financial institutions supplying agricultural finance face? How can technology be used to better reach and serve rural clients? (UPSC-2014)

Topics: Issues related to direct and indirect farm subsidies and minimum support prices; Public Distribution System-objectives, functioning, limitations, revamping; issues of buffer stocks and food security; Technology missions; economics of animal-rearing.

5. RICE FORTIFICATION

Context:

The Union Cabinet has extended the universal supply of fortified rice in all central government schemes providing free food grain under the National Food Security Act, 2021, in its present form, until December 2028.

What is rice fortification, and why is it needed?

- **Definition**: Rice fortification involves adding essential micronutrients to rice to improve its nutritional quality, providing public health benefits with minimal risk to health.
- **Need**: India has high levels of malnutrition, with widespread anaemia affecting children, women, and men. Malnutrition results in stunted growth and low productivity, which fortification can help address.
- **Health benefits**: Fortified rice supplements diets with vital nutrients like iron, folic acid, and vitamin B12, addressing the widespread nutritional gaps in the population.
- **Staple diet**: Since rice is a staple food consumed by nearly two-thirds of India's population, fortifying it can significantly impact public health.

Process of rice fortification

- **Technologies used**: Methods like coating, dusting, and extrusion are used to add micronutrients to rice, with extrusion being the most suitable for India.
- **Extrusion process**: Dry rice flour is mixed with micronutrient premix and water, then passed through an extruder machine to produce fortified rice kernels (FRKs).
- **Blending**: These kernels are blended with regular rice at a ratio of 10 g FRK to 1 kg of regular rice.
- **Shelf life**: Fortified rice kernels have a shelf life of at least 12 months, ensuring long-term storage and distribution without losing nutritional value.

FSSAI norms and nutrients involved:

- **Iron**: Each kilogram of fortified rice contains 28 mg-42.5 mg of iron to combat iron-deficiency anaemia.
- **Folic acid**: Contains 75-125 micrograms of folic acid, essential for preventing birth defects and boosting immunity.
- **Vitamin B-12**: Includes 0.75-1.25 micrograms of vitamin B-12 to improve energy levels and prevent nerve damage.
- **Additional nutrients**: Fortified rice may also include zinc, vitamin A, B1, B2, B3, and B6 to enhance overall health.

Initiatives so far:

- **Phase 1 (2022)**: Fortified rice was initially distributed through Integrated Child Development Services and PM POSHAN schemes.
- **Phase 2 (2023)**: Extended to the Public Distribution System (PDS) in 112 Aspirational Districts and 291 high stunting burden districts.
- **Phase 3 (2024)**: Universal coverage achieved, with fortified rice distributed in all districts under various government schemes.
- **Production capacity**: India has 925 fortified rice manufacturers with a capacity to produce 111 LMT of fortified rice annually.

Limitations:

- **Cost**: The annual cost of rice fortification is around Rs 2,700 crore, which may strain budget allocations.
- **Quality control**: Inconsistent quality of fortified rice due to the varying standards of rice mills and manufacturers.
- **Awareness**: Lack of awareness among the population about the benefits of fortified rice reduces its acceptance.
- **Distribution challenges**: Ensuring uniform distribution of fortified rice to remote and underprivileged areas remains a logistical challenge.

Way ahead:

- **Increase awareness**: Educate the public about the health benefits of fortified rice to improve its acceptance and demand.
- **Enhance quality standards**: Establish stringent quality control measures to ensure consistent nutrient levels in fortified rice.
- **Expand infrastructure**: Strengthen infrastructure at rice mills to improve blending and distribution capabilities.
- **Monitoring and evaluation**: Implement robust monitoring systems to assess the impact of rice fortification on public health regularly.

Insta Links:

1. Fortified-rice
2. Fortified-rice-kernels

PYQ:

1. Genetically modified "golden rice" has been engineered to meet human nutritional requirements. Which one of the following statements best qualifies golden rice? (UPSC- 2010)
   a) The grains have been fortified with

genes to provide three times higher grain yield per acre than other high yielding varieties.

b) Its grains contain pro-vitamin A which upon ingestion is converted to vitamin A in the human body.

c) Its modified -genes cause the synthesis of all the nine essential amino acids.

d) Its modified genes cause the fortification of its grains with vitamin D.

Answer: b)

Topics: Science and Technology- developments and their applications and effects in everyday life Achievements of Indians in science & technology; indigenization of technology and developing new technology.

6. REVOLUTIONARY ULTRASOUND METHOD ENHANCES EARLY CANCER DETECTION

Context:

Scientists have developed a new technique to detect cancers. The method uses ultrasound to turn a small part of our body's tissue into droplets that are released into the blood. These bubbles contain molecules like RNA, DNA, and proteins that allow the scientists to identify particular types of cancer.

Technology used and methods:

1. **High-energy ultrasound:** Employs higher-frequency sound waves than traditional ultrasound, capable of interacting more intensely with tissues.
2. **Droplet formation:** The ultrasound waves cause tiny pieces of cancerous tissue to break off, turning them into droplets that release molecular contents into the bloodstream.
3. **Biomarker analysis:** The droplets contain biomarkers like RNA, DNA, and proteins, which are then extracted from the blood and analyzed to identify specific cancer types.
4. **Single cell detection capability:** The method is sensitive enough to detect a single cancer cell in blood samples, providing insights into cancer progression and metastasis.

Significance

1. **Non-invasive technique:** Reduces the need for painful and invasive procedures like biopsies, making cancer detection easier for patients.
2. **Cost-effective solution:** Expected to lower the cost of cancer detection significantly, offering a more affordable alternative to current expensive tests.
3. **High sensitivity:** Increases the concentration of detectable biomarkers by over 100 times, improving early cancer detection accuracy.
4. **Versatility:** Has the potential to detect multiple cancer types, such as prostate, breast, and melanoma, using a single diagnostic approach.

Limitations:

1. **Clinical validation required:** Needs extensive clinical trials on diverse populations to ensure its effectiveness and accuracy before widespread use.
2. **Technical standardization:** Challenges in standardizing the technique for different cancer types and ensuring consistent results across various settings.
3. **Biomarker variability:** The sensitivity of detection may vary with different cancers due to variations in biomarker thresholds, potentially affecting accuracy.
4. **Early development stage:** Still in the experimental phase, with a timeline of at least five years before potential commercial availability, depending on trial outcomes.

Early Cancer Detection:

- **Definition:** Early cancer detection involves identifying cancer at its initial stages, significantly improving treatment outcomes.
- **Two components:**
  - **Screening:** Testing asymptomatic individuals to detect cancer before symptoms appear (e.g., mammography for breast cancer).
  - **Early diagnosis:** Focuses on symptomatic patients, aiming for prompt detection, diagnosis, and treatment.
- **Difference:** Screening targets asymptomatic people and specific cancers (e.g., breast, cervical), while early diagnosis focuses on all cancers in symptomatic patients.
- **Challenges:**
  - Risk of false-positive and false-negative results.
  - Overdiagnosis leading to unnecessary treatments.
  - Limited recommendations for certain cancers due to risk-benefit concerns.

About Cancer

- **Definition:** Cancer is a disease characterized by uncontrolled cell growth that spreads to other parts of the body.
- **Global impact:** The second leading cause of death worldwide, responsible for 1 in 6 deaths in 2018.
- **Importance of early detection:** Early detection

increases the likelihood of successful treatment and can significantly reduce mortality rates.

Insta Links:

1. Cancer-in-India-a-status-report
2. Cancer-moonshot-initiative

PYQ:

1. What are the research and developmental achievements in applied biotechnology? How will these achievements help to uplift the poorer sections of the society? (UPSC-2021)
2. What do you understand by nanotechnology and how is it helping in health sector? (UPSC-2020)
3. Why is there so much activity in the field of biotechnology in our country? How has this activity benefitted the field of biopharma? (UPSC-2018)

Topics: Security challenges and their management in border areas; linkages of organized crime with terrorism.

7. STRENGTHENING BORDERS: SECURITY DYNAMICS IN LADAKH

Context:

The Ukraine war highlights the renewed importance of battle tanks alongside long-range firepower. Since the May 2020 stand-off in Eastern Ladakh, India and China have deployed tanks at altitudes of 13,000-15,000 feet, sometimes with barrels just 100 meters apart.

Tanks armouring Ladakh sector:

- **Revival of tanks in modern warfare:**
  1. **Global relevance:** Tanks have regained importance in modern conflicts, proving essential alongside long-range firepower, as seen in the Ukraine war.
  2. **Ladakh deployment:** India and China have stationed tanks at altitudes of 13,000-15,000 feet on the

Line of Actual Control (LAC).

3. **Close proximity:** Tanks from both nations were positioned as close as 100 meters apart during peak tensions on the Pangong Tso in 2020.
4. **Enhanced capabilities:** Armoured units now feature advanced equipment, making them adaptable to evolving battlefield dynamics.

- **Current situation in Ladakh:**
  1. **T-90 Bhishma tanks:** India has deployed T-90 tanks and BMP-2 carriers to demonstrate capabilities like deep-fording and maneuverability at high altitudes.
  2. **Operational challenges:** Tanks require frequent engine revving in cold conditions to maintain functionality due to low oxygen levels.
  3. **Infrastructure upgrades:** Maintenance facilities and winterisation kits have been set up at Nyoma and other strategic locations.
  4. **Increased presence:** Tank regiments, including T-72s and artillery units, have been steadily added to fortify the region since the 2020 stand-off.
- **Challenges of high-altitude operations:**
  1. **Extreme weather:** Harsh conditions with temperatures dropping to -40°C impact the performance and durability of tanks.
  2. **Oxygen levels:** Low oxygen at high altitudes affects both the crew and the engine's efficiency, necessitating special adaptations.
  3. **Wear and tear:** Rapid degradation and high wear and tear of equipment require faster turnaround of spares and technical support.
  4. **Logistics:** Transporting and maintaining heavy armoured units in such terrain is a logistical challenge, demanding specialized facilities.
- **Threats from China:**
  1. **PLA modernization:** China has deployed advanced ZTQ 15 light tanks and Type 96A tanks along the LAC, enhancing its military presence.
  2. **Mechanized units:** Chinese mechanized brigades have inducted new wheeled APCs and CSK assault vehicles for rapid mobility.
  3. **Strategic positioning:** China has improved its infrastructure and troop strength along the LAC, posing a persistent threat to Indian positions.
  4. **Comparative advantage:** Chinese light tanks are more agile and maneuverable in high-altitude conditions compared to traditional heavy tanks.
- **Indian Army's future plans:**
  1. **Tank upgrades:** Plans to upgrade T-72 tanks and BMP-2 carriers with advanced engines and new-generation Anti-Tank Guided Missiles (ATGMs).
  2. **Light tank development:** Indigenous light tank 'Zorawar' is in development with expected trials by August 2025 for deployment in Ladakh.
  3. **Modern combat vehicles:** Focus on acquiring Future Ready Combat Vehicles (FRCV) and Future Infantry Combat Vehicles (FICV) for advanced warfare.
  4. **Countermeasures:** Implementing technology to counter drones and loitering munitions, including air burst ammunition to protect armoured units.

Insta Links:

1. Ladak-and-sixth-schedule
2. High-powered-committee-for-Ladakh

PYQ:

1. Why are the tribals in India referred to as 'the Scheduled Tribes? Indicate the major provisions enshrined in the Constitution of India for their upliftment. (UPSC-2016)
2. The China-Pakistan Economic Corridor (CPEC) is viewed as a cardinal subset of China's larger 'One Belt One Road' initiative. Give a brief description of CPEC and enumerate the reasons why India has distanced itself from the same. (UPSC-2018)

CONTENT FOR MAINS ENRICHMENT

Topic in News	Usage in Answers

1. RULE TO ROLL SHIFT	**Context:** Minister Dr Jitendra Singh highlighted a significant transformation in India's governance approach, moving from a traditional rule-based system to a dynamic, role-based framework.
	• Shifts from rule-based to role-based system for civil servants.
	• Abolition of interviews for Group B and C positions and faster recruitment timelines.
	• Emphasizes performance-driven focus for tangible results and global aspirations.
	• Mission Karmayogi Prarambh focuses on preparing new recruits with necessary tools and training.
	• Introduction of iGOT-Karmayogi platform with four new features and 20 domain-specific courses.
	• Initiatives like "Know Your Ministry" and new learning modules for skill strengthening.
	
	Relevance to UPSC Syllabus
	• **General Studies Paper II (Polity and Governance):**
	  ○ **Government policies and interventions**
	  ○ **Governance and accountability**
	• **General Studies Paper IV:**
	  ○ **Public/Civil service values and Ethics in public administration**
	  ○ **Case Studies on government efforts**
	• **Essay writing:**
	  ○ Can be used in essays on topics like "Reforms in Civil Services," "Role of Technology in Governance," or "Modernizing Indian Administration."

2. BRIDE BAZAAR	**Context:** The "bride bazaar" in Hyderabad's Old City has resurfaced online, facilitating marriages between young girls and wealthy Arab men, often much older than the brides. These marriages, brokered by agents, now occur via WhatsApp video calls instead of physical meetings. Despite earlier crackdowns, at least 20-30 such marriages happen monthly, with girls sent to their "husbands" on tourist visas, often facing exploitation. The process is hard to trace due to its online nature, requiring stricter monitoring of brokers and visa agents. **Usage in UPSC Syllabus:** • **GS4 (Ethics, Integrity, and Aptitude):** This case highlights issues of human trafficking, exploitation, moral ethics, and violation of human rights. It emphasizes the need for a moral compass in policymaking and law enforcement to protect vulnerable individuals. • **Essay paper:** The topic can be used to discuss themes like human rights, social justice, gender equality, and moral responsibilities in society. **Ethical issues involved:** 1. **Exploitation:** Young girls are exploited financially due to their poverty. 2. **Human trafficking:** Marriages are used to traffic women for potential abuse abroad. 3. **Violation of consent:** These marriages undermine the girls' autonomy and true consent. 4. **Corruption:** Agents and some authorities prioritize profit over ethical responsibilities.

3. AGRICULTURAL GROWTH DATA

Context: India's agricultural sector has seen improved growth over the last two decades, with a notable acceleration during the tenure of the Modi-led NDA government, according to a NITI Aayog paper.

Agricultural growth data: (Source: NITI Aayog, Ramesh Chand and Jaspal Singh)

Period	Average Annual Growth in Agri GVA	Primary Drivers of Growth
1984-85 to 1993-94	2.90%	Traditional crops
1994-95 to 2003-04	2.90%	Traditional crops
2004-05 to 2013-14	3.50%	Diversification begins; livestock
2014-15 to 2023-24	3.70%	Livestock, fisheries, horticulture

Key highlights of Sub - sectors:

Subsector	Growth Rate (2014-15 to 2022-23)
Poultry Meat	9.20%
Fishing & Aquaculture	9.10%
Eggs	6.60%
Milk	5.80%
Horticulture	3.90%
Crops (Field)	1.60%

NOTE: Try to memorise data table and its trend. In case of difficulty in memorising go for graph which can fetch you same value addition to your answer.

State-wise Performance (2014-15 to 2022-23)

- **Top Performers (4%+ Annual Growth):** Madhya Pradesh, Telangana, and 11 other states.
- **Lagging States:** Punjab (2% growth), Haryana (3.4%), West Bengal (2.8%).

Policy Implications

- **Market-led Diversification:** Emphasis on livestock, fisheries, and horticulture has driven agricultural growth.
- **Uneven Distribution:** Benefits of growth are not equally distributed, with field crops still lagging despite minimum support price interventions.
- **Need for Technology and Demand-Side Focus:** Improved production technologies and demand factors are more crucial than government price interventions for sustained growth.

4. INDIA CONTRIBUTES TO WHO

Context:
India has pledged over $300 million to the WHO's core programme for 2025-2028, making it the largest contributor in Southeast Asia.

- **Allocation breakdown:**
  - $250 million for the Centre of Excellence for Traditional Medicine.
  - $38 million for a new premises for WHO's regional office.
  - $10 million for digital health initiatives.
  - $4.6 million for thematic funding.
- **WHO funding gap:** WHO seeks to fill a $7.1 billion funding gap and has received pledges totaling over $2.2 billion.
- **WHO's 2025-2028 Mandate:**
  - The funds will be used to:
    - Save at least 40 million lives.
    - Deliver vaccines to priority countries.
    - Support 55 countries in training and employing 3.2 million health workers.
    - Prequalify 400 health products per year.
- **Regional contributions:** Countries in WHO's South-East Asia Region have pledged over $345 million in funding for WHO's core programme.
- **Upcoming events:** A pledging ceremony will take place in November at the G-20 summit in Brazil.

Relevance to UPSC Syllabus

- **GS II (Governance):** India's role in international organizations like WHO.
- **GS II (International Relations):** Bilateral and regional contributions to global health initiatives.
- **GS II (Health):** Public health funding and India's commitment to global health.
- **GS IV (Ethics in International Relations):** Ethical responsibilities of countries in supporting global health and "Health for all" initiatives.

5. VIDYAN MAHADAN

Context: **Ajay Grewal**, a Head Constable with the **Delhi Police**, has been running a free coaching center called **Vidyan Mahadan** on the terrace of his house in **Bahadurgarh, Haryana** since 2016. He teaches **general knowledge, reasoning, mathematics, English, and Hindi** to over **10,000 students** from economically weaker backgrounds, both in person and online, to help them prepare for government job exams.

Relevance to UPSC Ethics Syllabus and Essay Paper

5. **Ethics (GS4):**
   - **Altruism and Public Service**
   - **Empathy and Compassion**
   - **Role of Civil Servants**
6. **Essay Paper:**
   - **Education and Social Mobility**
   - **Leadership and Motivation**
   - **Ethical Leadership**

6. LIVING PLANET REPORT 2024

Context: The World-Wide Fund for Nature's (WWF) Living Planet Report 2024 reveals a 73% decline in monitored wildlife populations from 1970 to 2020. This report highlights the significant impact of habitat loss, climate change, and over-exploitation on global biodiversity.

Key data points

- **Wildlife population decline:** 73% decline in the average size of monitored wildlife populations from 1970-2020, up from 69% reported in 2022.
- **Ecosystem-specific declines:**
  - Freshwater ecosystems: 85% decline
  - Terrestrial ecosystems: 69% decline
  - Marine ecosystems: 56% decline
- **Main threats to wildlife:** Habitat loss, degradation, over-exploitation, invasive species, and diseases.
- **Data source:** Living Planet Index (LPI) provided by the Zoological Society of London, covering trends from 5,495 species and nearly 35,000 population records.

UPSC syllabus relevance

- **GS Paper III:** Environment and Ecology – Conservation, Environmental Pollution and Degradation, Environmental Impact Assessment.
- **Essay paper:** Topics related to climate change, biodiversity, and sustainable development.
- **Current affairs:** Issues concerning wildlife conservation, climate change policies, and environmental protection strategies.

7. UMANG - DIGI LOCKER

Context: The National e-Governance Division has announced the integration of the UMANG app with DigiLocker, allowing citizens to access a wide range of government services through a single platform.

- This collaboration aims to simplify user experience by bringing together multiple services under one digital interface.

Significance:

- **Enhanced accessibility:** Integration enables citizens to access government services easily and securely using both UMANG and DigiLocker.
- **Streamlined services:** Facilitates a unified platform for managing multiple government services, reducing the need for multiple apps.
- **Promotes Digital India:** Supports the government's goal of digitizing public services and promoting secure cloud-based storage solutions.

About UMANG App:

- **Full Form:** Unified Mobile Application for New-age Governance.
- **Purpose:** Provides a single platform for Indian citizens to access e-Gov services ranging from Central to Local Government bodies.
- **Availability:** Accessible to all Android users, offering various government services in one place.

About DigiLocker:

- **Flagship initiative:** Part of the Digital India program by the Ministry of Electronics and IT.
- **Purpose:** Provides secure cloud-based storage for essential documents and digital certificates.
- **Integration:** Allows users to access UMANG services through the DigiLocker app, enhancing convenience and efficiency.

8. OUT-OF-POCKET MEDICAL EXPENSES

Context: A government survey reported that the average out-of-pocket medical expenses for hospitalization over the past year were Rs 4,129 in rural areas and Rs 5,290 in urban areas.

Key Data Points from the Govt Survey (July 2022-June 2023)

1. **Out-of-Pocket medical expenditure**:
    - **Hospitalisation**: Rural households spent an average of ₹4,129 per year; urban households spent ₹5,290.
    - **Non-hospitalisation treatments**: Rural households spent ₹539 per month; urban households spent ₹606.
2. **Literacy and numeracy**:
    - 96.9% of individuals aged 15-24 can read, write, and perform simple arithmetic.
    - Literacy rates: 97.8% for males and 95.9% for females in the 15-24 age group.
3. **Education, Employment, and Training**:
    - 23.3% of the 15-24 age group were not in education, employment, or training (NEET).
    - The NEET figure rises to 25.6% for those aged 15-29.
4. **Digital access**:
    - 95.1% of households have a telephone or mobile connection.
    - Only 9.9% of households have access to computers.
    - 95.7% of individuals aged 15-24 in rural areas and 97% in urban areas can use mobile phones.

Relevance to UPSC syllabus:

- **Social issues and development**: Highlights gaps in healthcare access and costs in rural and urban areas.
- **Governance and policy-making**: Useful in evaluating policies related to health and education.
- **Economic development:** Data on out-of-pocket expenses aids in understanding financial burden on households.
- **Education and skill development:** Provides insights into literacy and skill training needs for youth.

FACTS FOR PRELIMS

GS-1

Art & Culture

1. 2024 NOBEL PRIZE IN LITERATURE

Context:

The 2024 Nobel Prize in Literature was awarded to South Korean author Han Kang for her **"intense poetic prose"** that explores historical traumas and human fragility. This marks a shift from recent Europe-centric winners, with the Swedish Academy recognizing her innovation in contemporary prose.

About Han Kang and her works:

- **Early career:** Han Kang started her literary journey with poetry, but her breakthrough came with her novel, **The Vegetarian (2007),** which won the Man Booker International Prize in 2016.
- **Key themes:** Her writing often addresses themes like patriarchy, violence, grief, and historical injustices, blending a radical and poetic imagination with intense narratives.
- **Notable works:**
  - **The vegetarian:** Explores a woman's decision to stop eating meat and her family's violent reactions.
  - **Human acts (2016):** Focuses on the 1980 Gwangju Uprising in South Korea, highlighting the voices of historical victims.
  - **The white book (2017):** A meditative exploration of grief and memory, constructed around the symbolism of the color white.
  - **Greek lessons (2023):** A story of love and loss between a woman who has lost her speech and a teacher losing his sight.
  - **We do not part:** Set against the backdrop of a hidden massacre in Korean history, it delves into collective trauma and memory.
- **Impact:** Her works have expanded Korean literature's reach globally, highlighting its power to address universal human experiences with empathy and depth.

Insta links:

1. 2023-Nobel-prize-for-literature-jon-olav-fosse

2. YUVA SANGAM

Context:

The Ministry of Education today launched the registration portal for the fifth phase of Yuva Sangam under Ek Bharat Shreshtha Bharat.

About Yuva Sangam:

- **Scheme part of:** Yuva Sangam is an initiative under the Ek Bharat Shreshtha Bharat (EBSB) program launched by the Government of India.
- **Aim:** Its primary goal is to foster cultural exchange and strengthen people-to-people connections among youth from different states and union territories of India.
- **Criteria:** Youth aged 18-30, including students, National Service Scheme (NSS) and Nehru Yuva Kendra Sangathan (NYKS) volunteers, and employed/self-employed individuals, are eligible to participate by registering on the Yuva Sangam portal.
- **Origin:** The initiative draws inspiration from the National Education Policy (NEP) 2020, focusing on experiential learning and promoting India's rich cultural diversity.
- **Significance:**
  - Provides multi-dimensional exposure to participants in areas like Tourism (Paryatan), Traditions (Parampara), Development (Pragati), People-to-people connect (Paraspar Sampark), and Technology (Prodyogiki).
  - Encourages youth to experience India's diverse heritage, development landmarks, and traditions first-hand.

Insta Links:

1. PM YUVA SCHEME
2. Ek Bharat Shreshtha Bharat

3. 2024 NOBEL PEACE PRIZE

Context:

The 2024 Nobel Peace Prize was awarded to **Nihon Hidankyo**, a Japanese organization representing the survivors of the Hiroshima and Nagasaki atomic bombings, known as "Hibakusha." The award recognized their tireless efforts to promote nuclear disarmament and highlight the catastrophic effects of nuclear weapons.

About Nihon Hidankyo:

1. **Origin:**
   - Founded on **August 10, 1956**, as a national organization for Hiroshima and Nagasaki atomic bomb survivors.
   - Created to **unify Hibakusha voices, promote their welfare**, and advocate

against nuclear weapons.

2. **Leadership:**
    - Led by Hibakusha themselves, sharing firsthand experiences to influence global policy and promote peace.
3. **Role and contributions:**
    - **Advocacy:** Pushing for nuclear disarmament through global platforms like the United Nations.
    - **Awareness:** Educating on the human and environmental impacts of nuclear warfare.
    - **Collaboration:** Working with groups like ICAN to support a treaty-based prohibition of nuclear weapons.
    - **Nuclear Taboo:** Contributed to the global norm against the use of nuclear weapons since 1945.
4. **Significance:**
    - Raised global awareness about nuclear dangers.
    - Supported international disarmament efforts despite challenges from countries expanding nuclear capabilities.

Insta links:

1. 2023-Nobel-prize-for-peace

History

4. DODDALATHUR MEGALITHIC SITE

Context:

A team of history and archaeology scholars and students from the University of Mysore have embarked on an excavation of megalithic burial sites in Chamarajanagar district (Karnataka).

About Doddalathur megalithic site:

- **Location:** Doddalathur village, Hanur taluk, Chamarajanagar district, Karnataka. Situated in a small valley formed by the Male Mahadeshwara Hill ranges.
- **Discovery:** Identified by C. Krishnamurti of the Archaeological Survey of India (ASI) in 1961.
- **Period:** The site corresponds to the Iron Age, broadly placed between 1200 BC and 300 CE in South India.
- **Significance:** Contains hundreds of megalithic burials characterized by circles made of large boulders. Many burials remain intact despite agricultural expansion and land development.
- **Current excavation:** Led by a team from the University of Mysore and the Mythic Society, Bengaluru, with a focus on understanding megalithic-iron age culture and providing field training to archaeology students.

About Megalithic sites:

- **Definition:** Megaliths are large stones used in prehistoric monuments or burial structures.
- **Purpose:** Constructed as burial sites or commemorative memorials (non-sepulchral).
    - **Burial types:** Include dolmenoid cists, cairn circles, capstones, and urns or sarcophagi made of terracotta.
    - **Memorial types:** Include non-sepulchral sites such as menhirs.
- **Types of Megalithic structures:**
    - **Stone circles (Cromlechs):** Circular arrangements of stones, sometimes used as burial markers.
    - **Dolmen:** A chamber formed by placing a large capstone on support stones, often used as tombs.
    - **Cist:** A small stone-built coffin-like box used to hold bodies, often placed underground.
    - **Monolith:** Single standing stones, sometimes used as markers or commemorative symbols.
    - **Capstone style:** Single horizontal stones placed over burial chambers without support stones.
- **Timeline:** Most megaliths in India date to the Iron Age (1500 BC to 500 BC), with some predating this period up to 2000 BC.
- **Geographic spread:** Found throughout Peninsular India, especially in Maharashtra, Karnataka, Tamil Nadu, Kerala, Andhra Pradesh, and Telangana.

Insta links:

Menhir-and-megalithic-burial-sites

5. NATIONAL MARITIME HERITAGE COMPLEX

Context:

In a significant decision, the Union Cabinet, has approved the development of the National Maritime Heritage Complex (NMHC) at Lothal, Gujarat.

More about National Maritime Heritage Complex (NMHC):

- **Location:** Being built in Lothal, Gujarat, under the Ministry of Ports, Shipping, and Waterways.
- **Objective:** Showcases India's maritime heritage from ancient to modern times through an educational and engaging experience.
- **Significance:** Set to be the world's largest maritime museum complex; aims to boost tourism, create jobs, and enhance India's global maritime image.
- **Key features:** Includes Lothal recreation, four

theme parks, coastal state pavilions, eco-resorts, a maritime research institute, and advanced museum facilities.

- **Development:** Managed by Tata Projects Ltd and designed by Architect Hafeez Contractor, creating around 22,000 jobs, promoting regional economic growth.

About Lothal:

- **Historical importance:** A significant Indus Valley Civilization site dating back to 2,200 BC; known for its role as a major trading hub.
- **Key discoveries:** World's oldest artificial dock, bead factories, warehouses, drainage systems, and evidence of maritime trade with West Asia and Africa.
- **Location:** Situated in Gujarat's Bhal region; well-connected by road and rail, making it accessible for visitors.
- **UNESCO status:** Nominated for the UNESCO World Heritage list, highlighting its historical significance in ancient maritime trade and culture.

Insta links:

1. National-maritime-heritage-complex

Geography

6. SLAG AND SEDIMENTARY ROCK FORMATION

Context:

Human activity has drastically transformed the Earth's landscape, leading to the creation of new geological formations, such as sedimentary rocks formed from slag, a by-product of the steelmaking industry.

Key Points on Slag and Sedimentary rock formation:

1. **Slag's role in artificial ground:**
   - Slag is a composite material from steel production, containing metal oxides and silicon dioxide.
   - It becomes a significant component of artificial ground, contributing to sedimentary material in the environment.
2. **Formation of sedimentary rock from slag:**
   - Slag undergoes lithification, turning into sedimentary rock through natural weathering.
   - This process can sequester greenhouse gases like carbon dioxide through mineral carbonation, mimicking natural processes.
3. **Carbon capture potential:**
   - The lithification of slag through calcite cement precipitation traps atmospheric carbon dioxide in the form of calcite.
   - This process can potentially reduce the carbon footprint of the steel industry by reusing slag deposits.
4. **Environmental and industrial implications:**
   - Calcite formation on the slag surface aids in carbon capture and prevents coastal erosion.
   - Calcium-silicate-hydrate (CSH) minerals formed in the intertidal zone limit the release of toxic metals from slag.
5. **Slag's future potential:**
   - Repurposing slag deposits for carbon capture could eliminate the need for additional processing facilities.
   - Hardened slag can also be used in coastal defense strategies to prevent erosion, combining waste management with environmental protection.

Insta links:

1. Different-types-of-rocks

7. AURORA BOREALIS

Context:

On October 10, 2024, Leh, Ladakh experienced a rare display of aurora borealis, or northern lights, due to a severe geomagnetic storm triggered by a coronal mass ejection (CME) from the Sun.

About auroras:

Auroras are natural light displays that appear as bright, swirling curtains in the night sky, with colors ranging from **green, red, and blue to yellow and purple.** These lights primarily occur near the poles, known as the **aurora borealis in the northern hemisphere** and **aurora australis in the southern hemisphere**, but can sometimes extend to lower latitudes.

Why auroras occur:

- **Caused by solar activity:** Auroras occur due to the interaction of charged particles from the Sun, known as the solar wind, with Earth's magnetic field.
- **Solar wind and earth's magnetic field:** As the solar wind reaches Earth, most particles are deflected by the planet's magnetic field. However, some particles get trapped and travel toward the poles.
- **Interaction with atmospheric gases:** These charged particles collide with gases like oxygen and nitrogen in the upper atmosphere, producing light. Oxygen emits green hues, while nitrogen produces blue and purple tones.
- **Influence of solar flares and CMEs:** During strong solar activity, like solar flares or coronal mass ejections (CMEs), the solar wind intensifies, leading to geomagnetic storms. These storms can cause auroras to expand to mid-latitudes, making them visible in regions farther from the poles.

Insta links:

Northern-lights-in-India

GS-2

Salient features of Indian Constitution

8. "FREE TO THINK 2024" REPORT

Context:

India's academic freedom has significantly declined over the past decade, with growing concerns over political influence and restrictions on student protests at universities. This trend has been highlighted in the "Free to Think 2024" report, which examines global academic freedom.

More about the report:

- **Published by:** Scholars at Risk (SAR) Academic Freedom Monitoring Project, a network of 665 universities worldwide.
- **India's Rank:** Slipped from 0.6 points to 0.2 points on the Academic Freedom Index from 2013 to 2023, now classified as **"completely restricted,"** its lowest level since the mid-1940s.
- **Key Findings:**
  - The report covers **391 attacks on higher education** in 51 countries between July 2023 and June 2024.
  - Highlights political control and a **Hindu nationalist agenda** influencing India's universities.
  - Restrictions on student protests noted in institutions like **Jawaharlal Nehru University (JNU) and South Asian University (SAU).**

  The report indicates growing tensions between the Indian central and state governments over higher education control, affecting institutions in states like Kerala, Tamil Nadu, West Bengal, and Punjab.

Insta links:

India-rankings-2024

Governance

9. CRITERIA FOR CLASSICAL LANGUAGE STATUS

Context:

The Union Cabinet's decision to accord classical language status to five new languages, including Marathi and Bengali, came after a key provision, which mandated that a language must have original literary tradition, was dropped.

Background on criteria for Classical Language **Status:**

- **In 2004**, the Government of India, for the **first time**, created a new category of languages known as *Classical Languages*. It set the following as criteria for the status of Classical Language:
  - High antiquity of its early texts/ recorded history over a thousand years.
  - A body of ancient literature/ texts, which is considered a valuable heritage by generation of speakers.
  - The literary tradition must be original and not borrowed from another speech community.

  This criterion was **revised in 2005 and 2024** based on the **recommendations of Linguistic Experts Committees (LEC) under Sahitya Akademi** to examine the proposed languages for the status of Classical Language.

Comparison of old and new criteria:

Criteria	Old Criteria (Revised in 2005)	New Criteria (Revised in 2024)
Antiquity of Texts	High antiquity of early texts/recorded history over a period of 1,500-2,000 years	High antiquity of early texts/recorded history over a period of 1,500-2,000 years
Ancient Literature	A body of ancient literature/texts, considered valuable heritage by generations of speakers	A body of ancient literature/texts, considered heritage by generations of speakers
Literary Tradition	Must have original literary traditions, not borrowed from another speech community	Inclusion of knowledge texts (prose and poetry), epigraphical and inscriptional evidence
Distinct Classical Language	Classical language and literature must be distinct from modern forms or have discontinuity with later forms	Classical languages and literature could be distinct from its current form or could be discontinuous with later forms of its offshoots

The 2024 Linguistic Expert Committee also recommended the following languages to be fulfilling revised criteria to be considered as a Classical Language: Marathi, Pali, Prakrit, Assamese, Bengali.

Insta links:

Classical-language-status

10. NATIONAL ANUBHAV AWARD SCHEME

Context:

For the first time, Anubhav me covers employees of Central Public Sector Undertakings, including Public Sector Banks.

About National Anubhav Award Scheme:

- **Origin and Aim:**
  - Launched in **March 2015** by the **Department of Pension & Pensioners'** Welfare.
  - **Objective:** To encourage and incentivize retiring and retired government employees to share their experiences and contributions towards nation-building through the Anubhav Portal.
- **Ministry Involved:**
  - Department of Pension & Pensioners' Welfare (DOPPW) under the Ministry of Personnel, Public Grievances and Pensions.
- **Key Features:**
  - **Eligibility:** Extended to employees of Central Government, CPSUs, and Public Sector Banks for the first time.
  - **Write-Up Submission:** Submissions can now be made up to three years after retirement, instead of the previous one-year limit.
  - **Award Categories:** Five Anubhav Awards and ten Jury Certificates will be conferred based on the assessment of published write-ups.
  - **New Marking System:** Introduced for evaluating submissions based on different pay levels to ensure a streamlined assessment process.

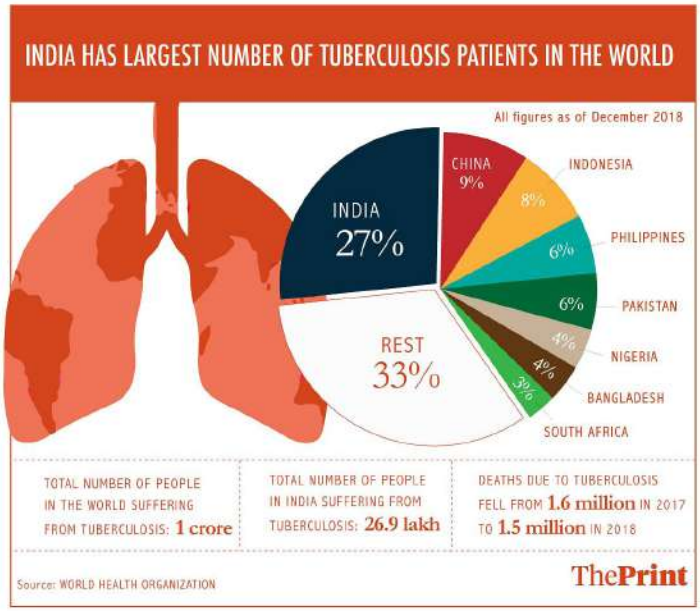
Insta Links:

Good governance

11. NI-KSHAY POSHAN YOJANA

Context:

Union Health Minister unveils key initiatives to boost Nutrition Support for TB Patients and their Families. Monthly support under Ni-Kshay Poshan Yojana increased from the existing ₹500 per month to ₹1000 per month for all TB patients.



Recent Changes in Ni-Kshay Poshan Yojana (NPY)

1. **Increased monthly support:** Nutritional support under Ni-Kshay Poshan Yojana has been raised from ₹500 to ₹1,000 per month for all TB patients throughout the treatment duration.
2. **Additional funding:** The government approved

an additional allocation of ₹1,040 crores to support the increased nutritional needs.

3. **Energy dense nutritional supplementation (EDNS):** EDNS introduced for underweight patients (BMI <18.5 kg/m2), covering approximately 12 lakh patients for the first two months of treatment.
4. **Expansion to household contacts:** The Ni-Kshay Mitra initiative under Pradhan Mantri TB Mukt Bharat Abhiyaan will now also support household contacts of TB patients with food baskets to boost immunity and reduce out-of-pocket expenses.

About Ni-Kshay portal:

1. **Ministry:** Managed by the Ministry of Health and Family Welfare, Government of India.
2. **Origin:** Launched in 2018 to digitally track and manage TB patients' treatment, improve data collection, and facilitate targeted interventions.
3. **Aim:** To achieve a TB-free India by 2025 by providing comprehensive support to patients, including nutritional and financial aid.
4. **Targets:** Focuses on tracking TB cases, ensuring compliance with treatment, and reducing transmission rates through Direct Benefit Transfers (DBT) and other support measures.

Schemes to counter TB in India

1. **Pradhan Mantri TB Mukt Bharat Abhiyaan (PMTBMBA):** Focuses on community support for TB patients, involving "Ni-kshay Mitras" to provide nutritional and social support to patients and their families.
2. **Ni-Kshay Poshan Yojana (NPY):** Provides nutritional support of ₹1,000 per month to all TB patients throughout the treatment period to enhance recovery and reduce out-of-pocket expenses.
3. **Energy dense nutritional supplementation (EDNS):** Specifically targets underweight TB patients (BMI <18.5 kg/m2) with supplementary nutrition to aid faster recovery.
4. **Direct benefit transfers (DBT):** Ensures financial assistance directly to beneficiaries' bank accounts to cover treatment and nutritional costs, aiming to improve adherence to TB treatment.

Insta links:

TB elimination

12. HUMSAFAR POLICY

Context:

Union Minister for Road Transport and Highways Nitin Gadkari has launched the 'Humsafar Policy' in New Delhi to enhance the convenience of traveling on national highways and accelerate the development of wayside amenities.

About Humsafar policy:

- **Ministry:** Launched by the Ministry of Road Transport and Highways.
- **Origin:** Introduced in 2024 as an initiative to improve travel experiences on national highways by developing wayside amenities and supporting environmental sustainability.
- **Aim:** The policy aims to enhance convenience, safety, and comfort for highway travelers while promoting local economic development and ecological sustainability.
- **Key Features of Humsafar Policy:**
  - **Wayside amenities:** Establishes standardized facilities like rest areas, food courts, clean washrooms, and parking on national highways.
  - **Support for local communities:** Creates business opportunities and employment for marginalized communities.
  - **Environmental sustainability:** Promotes water and soil conservation, waste recycling, and solar energy use.
  - **Digital accessibility:** Offers travelers instant access to services via the 'Rajmarg Yatra' app.

Insta links:

Road-transport-system-in-India

13. CDCSO

Context:

The Central Drugs Standard Control Organisation (CDSCO), along with the National Regulatory Authority of India, has successfully met the international standards for vaccine regulations set by the World Health Organisation (WHO).

About Central Drugs Standard Control Organisation **(CDSCO)**

- **Role:** CDSCO serves as the National Regulatory Authority (NRA) of India for the medical devices and pharmaceutical industry under the Drugs & Cosmetics Act.
- **Functionality:** It operates under the Ministry of Health & Family Welfare, with the Drugs Controller General of India (DCGI) as its head.
- **Headquarters:** Based in New Delhi, India.

Key Responsibilities of CDSCO:

1. **Approval of new drugs:** Evaluates and approves new drugs before they are released into the Indian market.
2. **Clinical trials oversight:** Regulates the conduct of clinical trials to ensure safety and compliance

with national standards.

3. **Drug standards:** Establishes and maintains standards for drugs to ensure quality and consistency.
4. **Import control:** Monitors and controls the quality of imported drugs to maintain safety standards within the country.
5. **Coordination with state authorities:** Works in coordination with State Drug Control Organizations for the regulation and licensing of drugs.
6. **Specialized drug categories:** Oversees the approval and regulation of critical drugs like blood products, I.V. Fluids, vaccines, and sera in collaboration with state regulators.

Significance of CDSCO's achievement:

- **Global compliance:** India retains Maturity Level 3, indicating a high level of compliance with WHO's vaccine regulatory standards.
- **Pharmaceutical leadership:** Reinforces India's reputation as a leading global producer of affordable vaccines and generic medicines.
- **Commitment to quality:** Demonstrates India's dedication to maintaining high standards in vaccine safety, efficacy, and quality, supporting global health initiatives.

Insta links:
CDCSO

International Relations

14. UNIFIL (UNITED NATIONS INTERIM FORCE IN LEBANON)

Context:
India expressed concern over the worsening security situation in West Asia following the injury of two United Nations peacekeeping personnel by an Israeli tank attack along the Lebanon-Israel border.

About UNIFIL (United Nations Interim Force in Lebanon)

- **Establishment:** Created by the UN Security Council in March 1978 through resolutions 425 and 426 following Israel's invasion of Lebanon.
- **Mandate:**
  - Confirm the withdrawal of Israeli forces from southern Lebanon.
  - Restore international peace and security in the region.
  - Assist the Government of Lebanon in re-establishing its authority in the area.
  - Expanded in 2006 to prevent hostile activities and monitor the ceasefire between Israel and Hezbollah.
- **Personnel:** Comprises over 10,500 peacekeepers from 48 countries, performing approximately 14,500 operations monthly, including joint activities with the Lebanese Armed Forces.
- **Operations:** Primarily observational, with peacekeepers allowed to use force only in self-defense or to protect civilians.
- **Maritime task force:** Includes a five-vessel unit to support coastal security and prevent arms smuggling.
- **Funding:** Financed through a dedicated budget approved annually by the UN General Assembly as part of the UN Peacekeeping force.

Insta links:
UN-Peacekeeping-Forces

GS-3

Indian Economy

15. UPI123 AND UPI LITE

Context:
To encourage wider adoption of the Unified Payments Interface (UPI), the RBI on Thursday announced an increase in transaction limits on UPI123 and UPI Lite.

Recent Changes Announced by RBI

1. **UPI Lite wallet limit:** The UPI Lite wallet limit has been increased from ₹2,000 to ₹5,000, and the per-transaction limit has been enhanced from ₹500 to ₹1,000.
2. **UPI123Pay transaction limit:** The per-transaction limit for UPI123Pay has been raised from ₹5,000 to ₹10,000 to support higher-value transactions.
3. **Beneficiary account name look-up:** RBI will introduce a beneficiary account name look-up facility for RTGS and NEFT, similar to UPI and IMPS, enhancing security in payment transactions.

Difference between UPI Lite and UPI 123 are:

Feature	UPI Lite	UPI 123Pay
Target Users	Smartphone users with internet access	Feature phone users without internet access
Transaction Methods	Direct payment using stored funds on the device	IVR, missed call, app-based, and sound-based payments

Transaction Limit	Per-transaction limit increased from ₹500 to ₹1,000	Per-transaction limit raised from ₹5,000 to ₹10,000
Wallet Limit	Increased from ₹2,000 to ₹5,000	No specific wallet limit, uses linked bank accounts
Technology Requirement	Requires internet for initial setup and usage	Works without internet or smart-phone, using basic mobile functions
Use Cases	Ideal for small, everyday transac-tions	Designed for wid-er digital financial inclusion among feature phone us-ers

Insta links:
New-UPI-features

Science & Technology

16. ISRO THIRD LAUNCH PAD

Context:
ISRO is expanding its space capabilities by establishing a **third launch pad** at **Sriharikota**, aiming to support new technologies like the **New Generation Launch Vehicle (NGLV)**, while enhancing redundancy for critical missions and future space endeavors.

Existing launch pads in India:

1. **First launch pad (FLP):** Designed for PSLV missions; located at Sriharikota, Andhra Pradesh.
2. **Second launch pad (SLP):** Supports GSLV and LVM-3 missions; also situated at Sriharikota, Andhra Pradesh.

Key features of the third launch pad

1. **Redundancy:** Acts as a backup to ensure uninterrupted GSLV launches if issues arise with the second launch pad.
2. **Horizontal integration for NGLV:** Designed for horizontal assembly of the NGLV, focusing on liquid engine boosters, enhancing assembly efficiency.
3. **Increased payload capacity:** Supports NGLV's higher payloads — 20 tonnes to LEO and 9 tonnes to GTO, up from current vehicle capabilities.

Integrated stage testing: Will include stage testing facilities directly at the pad, unlike previous setups at Mahendragiri, streamlining operations.

17. NOBEL PRIZE FOR MEDICINE, 2024

Context:
The Nobel Prize for Medicine in 2024 has been awarded to Victor Ambros and Gary Ruvkun for their groundbreaking work in discovering microRNA and its role in gene regulation.

Nobel Prize in Medicine 2024:

- **Laureates:** Victor Ambros and Gary Ruvkun.
- **Work recognized:** Discovery of microRNA and its role in post-transcriptional gene regulation.
- **Research focus:** **They studied the roundworm** *C. Elegans* and identified how the lin-4 microRNA regulates the lin-14 gene by inhibiting its protein production.

Significance of their work:

1. **Gene regulation:** Understanding microRNA's role in gene regulation is crucial for biological processes as it helps control protein production in cells.
   E.g. Disruption in this regulation can lead to diseases like cancer or diabetes.
2. **Medical implications:** Their work has highlighted the role of microRNA in preventing or contributing to several diseases, including cancer, diabetes, and autoimmune disorders.
   E.g. Mutations in microRNA-related genes can cause congenital hearing loss or skeletal disorders.
3. **Therapeutic potential:** MicroRNA-based treatments are being explored for developing targeted therapies for genetic disorders.
   E.g. Therapeutic approaches may involve altering microRNA activity to treat specific cancers.
4. **Evolutionary importance:** MicroRNAs have been crucial in genetic evolution for millions of years, influencing how cells and tissues develop in multi-celled organisms.
   E.g. Abnormal microRNA activity has been linked to various developmental disorders.

Nobel prize overview:

- **Established:** 1901, based on Alfred Nobel's will to recognize contributions in Physics, Chemistry, Medicine, Literature, and Peace.
- **Award process:** Recipients are chosen by committees based on rigorous assessments of their work's impact on their respective fields.
- **Significance:** It is one of the highest honors in the scientific community, promoting advancements that contribute to humanity's well-being.
- **Selection criteria:** The Nobel Prize recognizes those whose discoveries have had the most significant benefit to humanity, with an emphasis on innovation and progress.

Insta links:
2023 Noble Prize for medicine

18. 2024 NOBEL PRIZE IN CHEMISTRY

Context:
The 2024 Nobel Prize in Chemistry has been awarded to three scientists for their pioneering contributions to **protein design and prediction** using advanced computational techniques.

Nobel Chemistry, 2024 winners:

1. **David Baker:** Recognized for his work in computational protein design.
2. **Demis Hassabis and John Jumper:** Awarded for their development of the AI model AlphaFold 2, which predicts protein structures.

Their Work:

- **David Baker:**
  - Developed methods for designing new proteins using bespoke software, leading to the creation of 'designer' proteins for specific applications.
  - His team's work in computational protein design began in 2003 and has since been refined to construct a wide variety of proteins.
- **Demis Hassabis and John Jumper:**
  - Created AlphaFold 2, an AI model capable of predicting the structures of millions of proteins.
  - AlphaFold 2 marked a breakthrough in 2020 by using AI to accurately predict complex protein structures, significantly surpassing previous manual efforts.

Significance:

1. **Revolutionizes protein research:** Their work enables the creation of custom proteins with specific applications, potentially transforming fields like drug discovery, biotechnology, and materials science.
2. **Accelerates scientific progress:** AlphaFold 2's ability to predict protein structures rapidly has saved years of research, offering insights into biological functions and disease mechanisms.
3. **Wider impact on chemistry:** The award highlights chemistry's interdisciplinary influence, involving AI and computational tools that expand its reach beyond traditional boundaries.
4. **Immediate recognition:** The prize was awarded just four to six years after Hassabis and Jumper's breakthrough, showcasing the rapid impact of their contributions on modern science.

Insta links:
2023-Nobel-prize-in-chemistry-quantum-dots

19. CHARON MOON

Context:
Scientists have recently detected carbon dioxide and hydrogen peroxide on Charon, Pluto's largest moon, using the James Webb Space Telescope (JWST).

About Charon

- **Largest moon of Pluto:** Charon is the largest of Pluto's five moons, roughly half the size of Pluto itself.
- **Discovery:** It was discovered on June 22, 1978, by James W. Christy and Robert S. Harrington at the U.S. Naval Observatory in Flagstaff, Arizona.
- **Size and mass:** Charon is about 1,214 kilometers (754 miles) in diameter, and its mass is more than one-tenth of Pluto's mass.
- **Double dwarf planet system:** Due to its size and mass relative to Pluto, they are often referred to as a double dwarf planet system.
- **Mutual tidal locking:** Charon and Pluto always show the same face to each other, a phenomenon known as mutual tidal locking.
- **Orbital period:** Charon orbits Pluto every 6.4 Earth days at a distance of about 19,640 kilometers (12,200 miles).
- **Surface composition:** Recent findings include carbon dioxide and hydrogen peroxide, in addition to previously known substances like water ice and ammonia-bearing compounds.
- **Kuiper belt object:** Charon is located in the Kuiper Belt and serves as an invaluable target for studying icy bodies beyond Neptune's orbit.

Insta links:
Chronicle India

20. TRACHOMA ELIMINATION

Context:
The World Health Organization (WHO) has declared that India has eliminated Trachoma as a public health problem in 2024, making it the **third country in the WHO South-East Asia Region** to achieve this milestone.

- The achievement aligns with the **WHO's 2021–2030 Neglected Tropical Disease Roadmap,** which targets the elimination of 20 diseases by 2030.

About Trachoma

- **Cause:** Trachoma is caused by the bacterium Chlamydia trachomatis and is a leading infectious cause of blindness worldwide.

- **Transmission:** It spreads through direct contact with infected eye or nasal discharges and via flies that come into contact with these secretions.
- **Symptoms:** Starts as conjunctivitis (pink eye), leading to repeated infections that cause the eyelashes to turn inward (trichiasis), scraping the cornea and potentially leading to blindness.
- **Prevention and Treatment:** Early-stage trachoma is treatable with antibiotics like azithromycin. Improving hygiene, sanitation, and access to clean water are key strategies in controlling its spread.

India's Achievement

- **National Effort:** The Union Government declared India free from infectious trachoma based on the National Trachoma Prevalence Surveys conducted from 2014 to 2017, showing an active trachoma prevalence of just 0.7%.
- **Global Recognition:** WHO praised India's success, citing strong government leadership as a key factor.

Other Recognitions at WHO Regional Conference

- **Bhutan** was recognized for cervical cancer elimination targets.
- **Timor-Leste** for eliminating lymphatic filariasis.
- **Maldives and Sri Lanka** for controlling Hepatitis B in children.
- Six countries were acknowledged for reducing under-five mortality and stillbirth rates.

Insta links:

Trachoma

21. NOBEL PRIZE FOR PHYSICS, 2024

Context:

The 2024 Nobel Prize in Physics has been awarded to **John Hopfield** and **Geoffrey Hinton** for their pioneering work in artificial neural networks (ANNs), crucial to machine learning and AI advancements.

Nobel Physics 2024 Winners

- **John Hopfield** (Princeton University, U.S.)
- **Geoffrey Hinton** (University of Toronto, Canada)

Work of the Laureates:

- **Hopfield Network:** John Hopfield developed a recurrent neural network using **Hebbian learning** principles, applying statistical physics to tasks like pattern recognition.
- **Restricted Boltzmann Machine (RBM):** Geoffrey Hinton advanced deep learning by refining neural networks to handle complex data, enabling significant AI capabilities.

Significance of their work:

1. **AI foundation:** Their innovations laid the groundwork for machine learning, allowing AI systems to learn and adapt.
2. **Deep learning:** Hinton's developments enabled AI models to perform complex tasks like natural language processing.
3. **AI applications:** Their work powers technologies like chatbots and image recognition.
4. **Integration of physics in AI:** Hopfield's methods improved computational efficiency in handling large datasets.

Insta links:

2023-Nobel-Prize-in-Physics

22. MACE PROJECT

Context:

The Major Atmospheric Cherenkov Experiment (MACE) Observatory was inaugurated at **Hanle, Ladakh.**

- The MACE project is a significant achievement for India in **cosmic-ray research, aiming to advance scientific understanding** and support the socio-economic development of Ladakh.

About the MACE project:

- **Location:** Hanle, Ladakh, at an altitude of ~4,300 m, making it the highest imaging Cherenkov telescope in the world.
- **Development:** Indigenously built by Bhabha Atomic Research Centre (BARC) with support from ECIL and other Indian partners.
- **Objective:** To study high-energy gamma rays and contribute to the understanding of the universe's most energetic phenomena, such as supernovae, black holes, and gamma-ray bursts.
- **Technology:** Uses Cherenkov imaging technology to detect cosmic rays and observe high-energy astrophysical events.
- **Significance:** Enhances India's cosmic-ray research capabilities and strengthens its position in multi-messenger astronomy on a global scale.

Significance of the MACE project

- **Scientific advancement:** Puts India at the forefront of cosmic-ray research, enhancing its ability to study high-energy gamma rays and contribute to global space research.
- **Technological achievement:** Demonstrates India's capability to develop world-class astronomical instruments, promoting self-reliance in advanced technology.
- **Socio-economic impact:** Supports the development of Ladakh by encouraging local talent to pursue careers in astronomy, astrophysics, and space sciences.

- **Global collaboration:** Aims to foster international partnerships in space research, contributing to the global scientific community's efforts to understand the universe's most energetic events.

Insta links:
Hanle-and-merak-ladakh

23. TDP1

Context:
Recent research by scientists at the Indian Association for the Cultivation of Science (IACS), Kolkata, has identified a new approach for cancer treatment by targeting a DNA repair enzyme called TDP1.

About TDP1:

- **Role:** Tyrosyl-DNA phosphodiesterase 1 (TDP1) is a DNA repair enzyme that plays a crucial role in fixing DNA damage induced by **Topoisomerase 1 (Top1)** inhibitors during cell division.
- **Activation:** TDP1 becomes particularly active during the mitotic phase, helping repair drug-induced DNA damage, allowing cancer cells to survive chemotherapy.
- **Regulation:** The enzyme's activity is regulated by Cyclin-dependent kinase 1 (CDK1), which enhances TDP1's ability to resolve DNA damage through phosphorylation.

Significance:

- **Enhanced cancer therapy:** Using CDK1 inhibitors with Top1 inhibitors disrupts DNA repair and halts the cell cycle, hindering cancer cell survival.
- **Drug resistance target:** TDP1 and CDK1 are new targets for overcoming resistance to current cancer therapies.
- **Precision medicine:** Focuses on personalized treatments by targeting cancer cells dependent on these DNA repair proteins.
- **Therapeutic potential:** Combining CDK1 inhibitors with existing drugs may boost cancer cell elimination, improving treatment success.

Insta links:
TH

Environment & Ecology

24. HALARI DONKEYS

Context:
The endangered Halari donkeys, native to the Halar region of Gujarat, are considered to be intelligent animals which work closely with human beings.

About Halari donkeys:

- **Region:** Found in the Halar region of Gujarat, primarily in Jamnagar and Dwarka districts of Saurashtra.
- **Status:** Considered endangered with a population of fewer than 500.
- **Appearance:** Typically white, larger, and more resilient compared to other donkey breeds.
- **Social behavior:** Intelligent and social animals, form close bonds with humans, often used for transport needs.

Uses

- **Construction:** Historically used in building dams, forts, hilltop temples, and rest houses due to their strength in carrying heavy loads.
- **Community usage:**
  - **Bharwad and Rabari pastoralists:** Used as pack animals during migration.
  - **Kumbhar community:** Employed in pottery work in the Jamnagar region.

Economic value

- **Market price:** Currently valued at over ₹1 lakh each, with rising demand for Halari donkey dairies.
- **Milk production:** Halari donkey milk is known for its sweetness, with powdered milk selling for more than ₹7,000 per kg in international markets, especially for cosmetics.

Conservation efforts:

- **Organizations involved:** Sahjeevan Trust, Gujarat's Animal Husbandry Department, and the National Bureau of Animal Genetic Resources.
- **Actions taken:** Identification of pure-bred male and female donkeys for breeding to increase population.
- **Future needs:** Experts advocate for breeding farms in the native Halar region, requiring more substantial State government resources.

Insta links:
Rajyamata-gomata

25. INDIAN WILD ASS

Context:
The population of wild asses in Gujarat, India, has seen a significant rise, reaching 7,672 as per the 2024 Wild Ass Population Estimation (WAPE). This marks a 26.14% increase from the 6,082 wild asses recorded in 2020.

About Indian Wild Ass:

- **Species and Habitat:**
  - It is a sub-species of the Asian Wild Ass, locally called Khur in Gujarat.
  - Found predominantly in the Little Rann of

Kutch and Great Rann of Kutch.
    - Habitats include desert and grassland ecosystems.
- **Population Data (2024 WAPE):**
    - Highest numbers found in **Surendranagar (2,705), followed by Kutch (1,993), Patan (1,615),** Banaskantha (710), Morbi (642), and Ahmedabad (7).
    - Gender and age distribution in forest areas: 2,569 females, 1,114 males, 584 babies, and 2,206 unclassified wild asses.
- **Conservation Status:**
    - **CITES:** Appendix II
    - **Wildlife Protection Act (1972):** Schedule I
- **Ecological Role:**
    - Contributes to seed dispersal, promoting vegetation growth.
    - Helps in habitat creation by clearing pathways through grazing.
- **Threats:**
    - Human activities like salt farming, agriculture, and cattle grazing.
    - Soil salinity issues due to irrigation canals bringing water to the area.
- **Conservation Efforts:**
    - Continuous rise in population due to state government's efforts since 1976.
    - Use of modern technology like drones and camera traps for population estimation.

Insta Links:
Indian wild ass

26. ANTARCTIC WARMING

Context:
A new study indicates a dramatic increase in plant cover on the Antarctic Peninsula, attributed to rising temperatures, signalling significant ecological changes.

About Antarctic warming:
- **Warming rate:** Antarctica is warming at a rate between 0.22°C to 0.32°C per decade, double the global average of 0.14-0.18°C per decade.
- **Antarctic peninsula:** This region is warming five times faster than the global average, with temperatures now nearly 3°C higher than in 1950.
- **Extreme heatwaves:** The continent has faced record-breaking heatwaves, with temperatures in July 2024 reaching up to 28°C above normal and a peak heatwave in March 2022 showing a rise of 39°C above average.
- **Sea ice loss:** Antarctica's sea ice extent in 2024 was the second smallest on record, closely following the record low in 2023.

Recent study findings:
- **Increased vegetation:** The extent of plant cover on the Antarctic Peninsula has increased 14 times over the past 35 years, expanding from less than 1 sq km in 1986 to nearly 12 sq km by 2021.
- **Greening rate:** The rate of greening increased by over 30% between 2016 and 2021, with vegetation like mosses and lichen thriving due to warmer conditions.
- **Impact on ecosystem:** Rising temperatures and increased plant life may lead to soil formation, creating conditions conducive to invasive species, potentially threatening native flora and fauna.
- **Albedo effect:** More plant life could reduce the peninsula's albedo (reflectivity), absorbing more solar energy and further increasing temperatures, potentially accelerating global warming.

Significance:
- **Indicator of climate change:** The expansion of plant cover highlights the profound impact of climate change even in the most remote and extreme regions.
- **Global repercussions:** Increased temperatures and ice loss in Antarctica contribute to rising sea levels, affecting coastal areas worldwide.
- **Ecological shifts:** The greening of Antarctica raises concerns about altering its ecosystem balance, paving the way for non-native species and impacting native biodiversity.

Insta links:
1. Impact-of-Antarctic-ice-melting-on-ocean-currents

Defence

27. VERY SHORT-RANGE AIR DEFENCE SYSTEM

Context:
The Defence Research and Development Organisation (DRDO) successfully conducted three flight tests of the fourth-generation miniaturized Very Short-Range Air Defence System (VSHORADS) at the Pokhran Field Firing Ranges in Rajasthan.

VSHORADS: Key features and details:
- **Type:** Fourth-generation Man Portable Air Defence System (MANPAD).
- **Design and development:** Indigenously developed by DRDO's Research Centre Imarat (RCI), Hyderabad, in collaboration with other DRDO laboratories and industry partners.
- **Purpose:** Designed to counter low-altitude aerial threats like helicopters and low-flying aircraft.

- **Range:** Capable of engaging targets at a range of up to 6 km.
- **Technologies incorporated:**
  - **Dual-band IIR seeker:** Ensures precise tracking and targeting of aerial threats.
  - **Miniaturised reaction control system:** Enhances missile maneuverability.
  - **Integrated avionics:** Provides advanced targeting and control.
  - **Dual-thrust solid motor:** Powers the missile for fast response and interception.
- **Portability:** Lightweight and portable design for quick deployment over difficult terrains.
- **Operational capability:** Demonstrated hit-to-kill capability against high-speed targets in various engagement modes (approaching, receding, and crossing scenarios).
- **Development status:** Trials completed with production agencies engaged, paving the way for early user trials and mass production.

Insta Links:
VSHORADS

28. SMALL MODULAR REACTORS

Context:
Nearly 20 years after the India-US civil nuclear deal was signed, Holtec International, a privately-held US company, has emerged as a potential catalyst to finally unlock the commercial potential of the pact.

About Small Modular Reactors (SMRs):

- **Definition:** Advanced nuclear reactors with a power capacity of up to 300 MW per unit, about one-third the size of traditional reactors.
- **Features:**
  - **Small:** Compact size, making them versatile for different sites.
  - **Modular:** Can be factory-assembled and transported for on-site installation.
  - **Reactors:** Use nuclear fission to generate heat and produce energy.

Advantages

- **Longevity:** Designed to operate for 40-60 years with over 90% capacity factors.
- **Low-Carbon Electricity:** Efficient in generating large amounts of clean energy.
- **Flexibility:** Ideal for remote locations and can be paired with renewable energy in hybrid systems.
- **Cost Efficiency:** Reduced fuel needs, lower staffing, and off-site manufacturing save construction time and costs.
- **Repurposing Sites:** Can be installed on decommissioned thermal power plant sites using existing infrastructure.

Safety Features

- **Enhanced Safety:** Smaller core damage risk, improved seismic isolation, and passive safety features reduce potential radioactive leaks.
- **Simple Design:** Lower likelihood of uncontrolled radioactive releases compared to traditional reactors.

Disadvantages

- **Limited Availability:** Not yet widely used for power generation.
- **Economic Viability:** Requires large-scale production to be cost-effective.
- **Regulatory Challenges:** Licensing for SMRs is complex and costly, designed primarily for larger reactors.

Insta links:
Bharat-small-reactors

29. LSAM 12 (MISSILE CUM AMMUNITION BARGE)

Context:
The Indian Navy marked a significant milestone with the launch of the 'Missile Cum Ammunition Barge, LSAM 12 (Yard 80)', the sixth vessel in the series of eight barges designed to transport ammunition and supplies.

About LSAM 12 (Missile Cum Ammunition Barge)

- **Project details:** Sixth barge of the 08 x Missile Cum Ammunition Barge project, aimed at enhancing the operational logistics of the Indian Navy.
- **Manufacturer:** Built by M/s SECON Engineering Projects Pvt Ltd, Visakhapatnam, an MSME shipyard.
- **Contract:** Agreement for building the barges was signed between the Ministry of Defence (MoD) and SECON on 19 Feb 2021.
- **Purpose:** Facilitates the transportation, embarkation, and disembarkation of ammunition and supplies to naval platforms at jetties and outer harbours.
- **Design and testing:** Indigenously designed under the regulations of the Indian Register of Shipping with model testing conducted at the Naval Science and Technological Laboratory, Visakhapatnam.
- **Make in India initiative:** Symbolizes India's push for self-reliance in defense manufacturing and aligns with the Government's Make in India policy.

Insta Links:
1. LSAM 12

30. T-90 BHISHMA TANK

Context:

In a significant stride towards self-reliance, the Indian Army has successfully overhauled its first T-90 Bhishma tank, marking a critical step in enhancing its operational readiness.

About T-90 Bhishma Tank:

- **Origin:** The T-90 Bhishma is a main battle tank of the Indian Army, procured from Russia in 2001, with deliveries starting in 2004.
- **Specifications:**
  - Weighs approximately 47 tonnes.
  - Measures 9.6 meters in length and 2.8 meters in width.
  - Can reach speeds up to 60 km/h, making it highly maneuverable in various terrains like forests and marshes.
- **Firepower:**
  - Equipped with a 125 mm smoothbore gun, capable of firing different types of shells.
  - Features an anti-aircraft gun that can target within a range of 2 kilometers and fire up to 800 shells per minute.
- **Advanced Features:**
  - Sports a new turret weapon station with an upgraded 125 mm gun.
  - Integrated with a highly automated digital fire control system (FCS) to effectively target enemy tanks, self-propelled guns, and other armored targets.
  - Includes a guided missile system capable of destroying armored targets, even those with explosive reactive armor (ERA), with a range of up to 5 kilometers.
- **Crew:**
  - Operated by a crew of three: commander, gunner, and driver.
- **Protection:**
  - Equipped with a Nuclear-Biological-Chemical (NBC) protection system to safeguard the crew in hazardous environments.

Insta links:

1. Ladakh-security

INSIGHT SHORTS

Topic	Why in news?
1. IDEX (ADITI 2.0) CHALLENGE	Offers 19 challenges in AI, Quantum Tech, anti-drone systems, with grants up to ₹25 crore for iDEX winners.
2. DISC 12 CHALLENGE	Presents 41 challenges in UAVs, AI, and communication, including MIRA initiative, with grants up to ₹1.50 crore for start-ups/MSMEs.
3. INDIAN INSTITUTE OF FOREIGN TRADE	The iconic India Pavilion at the Expo City in Dubai will host the first overseas campus of Indian Institute of Foreign Trade (IIFT).
4. NEPAL AND INDIA	Both nations have reached the B2B Framework Agreement regarding the development of petroleum infrastructure in Nepal.
5. FRANCE AND INDIA	Both nations jointly will be setting up an aeronautics cluster as well as developing an Indo-French campus for professional training in aeronautics and space.

MAPPING

INTERNATIONAL

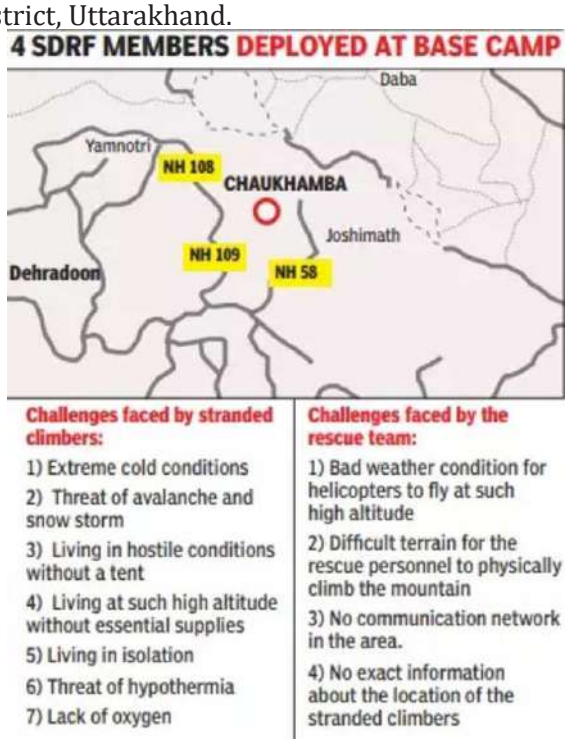
Place	Why in News?
1. SUDAN CIVIL WAR	**Context:** The Sudanese Armed Forces (SAF) launched a major offensive against the paramilitary Rapid Support Forces (RSF) in Khartoum and Bahri. Thus, the war which was quiet for a few months has gained momentum again. Eighteen months into the civil war, the UN said that more than 20,000 people have been killed. **Places in news:** 

1. **Khartoum and Bahri:** Major sites where the Sudanese Armed Forces (SAF) launched a renewed offensive against the Rapid Support Forces (RSF).
2. **Omdurman:** One of the conflict zones that experienced spread of violence beyond the initial fighting in Khartoum.
3. **El Fasher:** Located in Darfur, heavily impacted by clashes and a critical area in the ongoing humanitarian crisis.
4. **Darfur and Kordofan States:** Regions facing severe humanitarian issues, including famine and ethnic-targeted violence due to the conflict.
5. **Zamzam Camp, North Darfur:** Declared as having famine conditions, hosting nearly 500,000 internally displaced persons (IDPs).
6. **Jazeera State:** Facing food insecurity crisis similar to conditions in Zamzam camp due to the ongoing conflict.
7. **El Fashaga Region:** Border area with Ethiopia, witnessing frequent clashes over agricultural land amid the ongoing instability.
8. **Abiey Region:** Disputed land between Sudan and South Sudan, with increased ethnic violence and over 100 casualties reported.

Insta links:
Darfur-Sudan

2. CHAUKHAMBA III PEAK

Context: Recently, two foreign climbers, Michelle Theresa Dvorak (USA) and Fay Jane Manners (UK), were rescued from an elevation of 6,015 meters near the Chaukhamba III peak in Chamoli district, Uttarakhand.



About Chaukhamba:

- **Location:** Part of the Gangotri Group in the Garhwal Himalayas, Uttarakhand, India.
- **Proximity:** Located west of Badrinath at the head of the Gangotri Glacier.
- **Summits:**
  - **Chaukhamba I:** 7,138 m (23,419 ft) — the tallest in the Gangotri range.
  - **Chaukhamba II:** 7,070 m (23,196 ft).
  - **Chaukhamba III:** 6,995 m (22,949 ft).
  - **Chaukhamba IV:** 6,854 m (22,487 ft).
- **Significance:** Forms the eastern anchor of the Gangotri Glacier and a prominent massif in the Garhwal Himalayas.

Insta links:
Gangotri-national-park
Char-dham

Place	Why in News?
3. ETURNAGARAM WILDLIFE SANCTUARY	**Context:** A catastrophic weather event flattened an estimated 50,000 trees over 332 hectares in Eturnagaram Wildlife Sanctuary in Mulugu, Telangana, devastating the landscape.

About Eturnagaram wildlife sanctuary:

- **Location:** Situated in Mulugu district, Telangana, near the borders of Maharashtra and Chhattisgarh, 100 km from Warangal and 250 km from Hyderabad.
- **Established:** Declared a wildlife sanctuary in 1952 by the Hyderabad Nizam Government.
- **Area:** Spans over approximately 806 sq. km.
- **Water bodies:** Dayyam Vagu stream divides the sanctuary, with the Godavari River also flowing through it.
- **Flora:** Dominated by tropical dry deciduous forests with species like teak, bamboo, madhuca, and terminalia.
- **Fauna:** Home to diverse wildlife including tigers, leopards, panthers, wolves, sloth bears, blackbucks, nilgai, sambar, and four-horned antelope. Hosts reptiles like Mugger crocodiles, cobras, pythons, and kraits.
- **Cultural significance:** Contains the famous Sammakka-Saralamma Temple within its boundaries.

Insta links:
Eturnagaram-amrabad-wildlife-sanctuaries

4. GANGARAM-CHAK AND GANGARAM-CHAK-BHADULIA COAL MINE

Context: At least five people were killed in an explosion at a coal mine in West Bengal's Birbhum district.

Places in news:

1. **Birbhum District, West Bengal:**
   - **Location:** Birbhum is located in the western part of the state of West Bengal, India.
   - **Mineral extracted:** Known for coal mining, with several mines operating in the region, including the Gangaramchak and Gangaramchak-Bhadulia coal mines.
2. **Gangaramchak and Gangaramchak-Bhadulia coal mine:**
   - **Location:** These coal mines are situated in the Khoyrasole block of Birbhum district, West Bengal.
   - **Mineral extracted:** Primarily coal, used for energy production by the West Bengal Power Development Corporation Ltd. (WBPDCL).
3. **Khoyrasole Block:**
   - **Location:** A block under Lokpur police station in Birbhum district, West Bengal.
   - **Mineral extracted:** Coal mining activities are prominent in this area.
4. **Mohammad Bazar Area, Birbhum district:**
   - **Location:** A locality in Birbhum district, West Bengal, India.
   - **Mineral extracted:** Known for stone quarrying and mining activities, including the presence of explosive materials used for mining operations.

Insta links:
Coal-sector-reforms

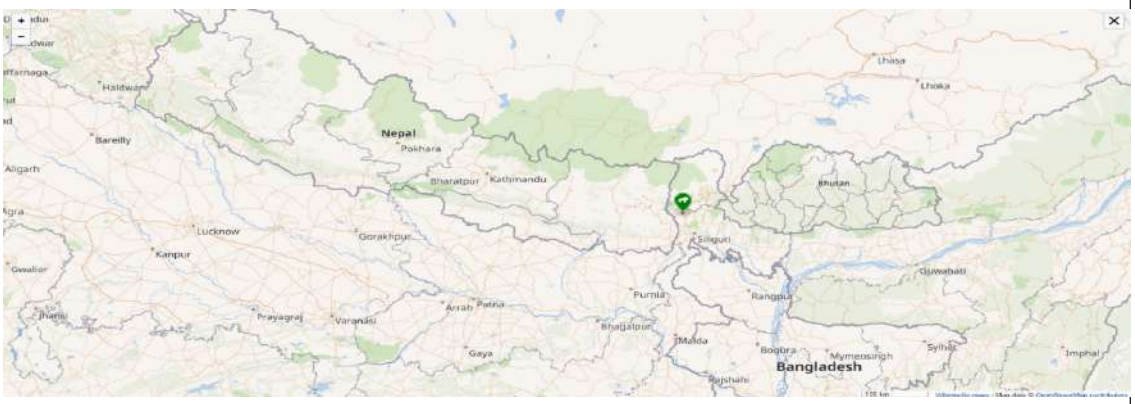
5. PADMAJA NAIDU HIMALAYAN ZOOLOGICAL PARK

Context: The Red Panda Program of Darjeeling's Padmaja Naidu Himalayan Zoological Park has been selected as a finalist for the **World Association of Zoos and Aquariums (WAZA) Conservation Award 2024.**

About Red Panda

- **Diet:** Primarily herbivorous, consuming bamboo, berries, acorns, and occasionally small mammals.
- **Behavior:** Shy, solitary, and arboreal; uses its bushy tail for balance and warmth in winter.
- **Habitat:** Lives in the mountainous forests of Bhutan, China, India, Myanmar, and Nepal, with nearly 50% of its habitat in the Eastern Himalayas.
- **Conservation Status:**
  - **IUCN Red List:** Endangered
  - **CITES:** Appendix I
  - **Wildlife Protection Act 1972 (India):** Schedule I
- **Threats:** Habitat loss due to deforestation and decline in bamboo forests are major threats to red panda populations.

About Padmaja Naidu Himalayan Zoological Park:



- **Location:** Darjeeling, West Bengal, India.
- **Established:** 1958; situated at an elevation of 7,000 feet (2,134 m).
- **Size:** 67.56 acres (27.3 hectares), making it the largest high-altitude zoo in India.
- **Specialization:** Focuses on breeding animals adapted to alpine conditions, with successful programs for species like snow leopards, Himalayan wolves, and red pandas.
- **Conservation Efforts:**
  - Plays a central role in India's red panda conservation and breeding efforts.
  - Houses a Biobanking and Genetic Resource Facility to preserve gametes, tissues, and DNA of endangered species.
- **Recognition:** Attracts around 300,000 visitors annually and is a member of the World Association of Zoos and Aquariums (WAZA).
- **Legacy:** Named after Padmaja Naidu, the daughter of Sarojini Naidu, in recognition of her contributions to Indian society.

Insta links:
Red panda

6. KARANPURA COALFIELD

Context: Recent studies using microscopic palynomorphs, organic remains, and geochemical assessments have indicated significant hydrocarbon generation potential in the South Karanpura coalfield, specifically in the eastern Sirka region of Jharkhand.

About South Karanpura coalfield:

- **Location:** Situated in the Ramgarh district of Jharkhand, India, forming an elongated strip along the Chingara fault.
- **Reserves:** Covers an area of approximately 195 square kilometers, with coal reserves estimated at 5,757.85 million tonnes.
- **Mineral richness:** Primarily consists of coal, carbonaceous shale, and sandstone layers, known for its significant deposits of workable coal.
- **Recent features:** High potential for hydrocarbon generation, especially in the eastern Sirka coalfield compared to the Giddi coalfield, with promising conditions for coal bed methane and shale gas exploration.

About Shale gas:

- Shale gas and oil **are unconventional natural resources**. They are found **at 2,500-5,000 metres below** the earth's surface.
- They are deeper in comparison to conventional crude oil found at 1,500 metres. The process of extracting shale oil and gas requires **deep vertical drilling followed by horizontal drilling.**
- The most common way to extract shale gas is **'hydraulic fracturing' (fracking)**, Shale gas is trapped under low permeable rocks.

Insta links:

DD NEWS