THE IAS GAZETTE

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CREATING CIVIL SERVANTS FOR THE NATION

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INDIA BANGLA DESH RELATIONS

Other topics

- Sub-reservation in SC Reservation
- Norms for Organ Transplant in India
- Left Wing Extremism
- Clean Plant Programme
- New Ramsar Wetland Sites
- Wayanad Landslide

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1. POLITY & GOVERNANCE

1.1 SUB-CATEGORISATION IN SCHEDULED CASTE RESERVATION

Context

- The recent decision by the Supreme Court of India to permit the sub-categorisation of Scheduled Castes (SCs) in reservations marks a significant shift from the court judgment in the E V Chinnaiah case 2004.

Background and Evolution

1975 Punjab Government Notification

- For the first time in India, the Punjab government had divided its 25% SC reservation quota into two categories.
- The first category reserved seats for the **Balmiki and Mazhabi Sikh communities**, considered the most economically and educationally backward within the SCs in Punjab.
- The second category included the remaining SC communities. This policy, in effect for nearly three decades, faced legal challenges.

E V Chinnaiah Judgment (2004)

- The Supreme Court, in the E V Chinnaiah v/s State of Andhra Pradesh case, held that **SCs were a single homogenous group. Any sub-classification among SCs for reservation purposes would violate Article 14 of the Constitution, which guarantees equality before the law.**
- The court emphasized that all SC communities had suffered from historical discrimination due to untouchability and should be treated uniformly.

Jarnail Singh v/s LachhmiNarain Gupta (2018)

- The Supreme Court **upheld the concept of the "creamy layer" within SCs**, borrowed from OBC reservations. This concept places an income ceiling on those eligible for reservations, ensuring that the benefits reach the most disadvantaged sections of the community.

The 2024 Verdict

- Seven-Judge Constitution Bench led by the Chief Justice of India ruled in a 6:1 decision that **SCs are not a homogenous group, allowing sub-categorization for reservations.**
- The court held that historical and empirical evidence supports this view, enabling states to provide wider protection to underrepresented castes within the SCs.

Sub-Classification of Scheduled Castes

- It involves **creating sub-categories within the broader SC category to ensure that the benefits of affirmative action reach the most marginalized groups within the SC community**.
- The recent Supreme Court decision allowing sub-categorization of Scheduled Castes (SCs) in reservations is a significant development with both potential benefits and drawbacks.

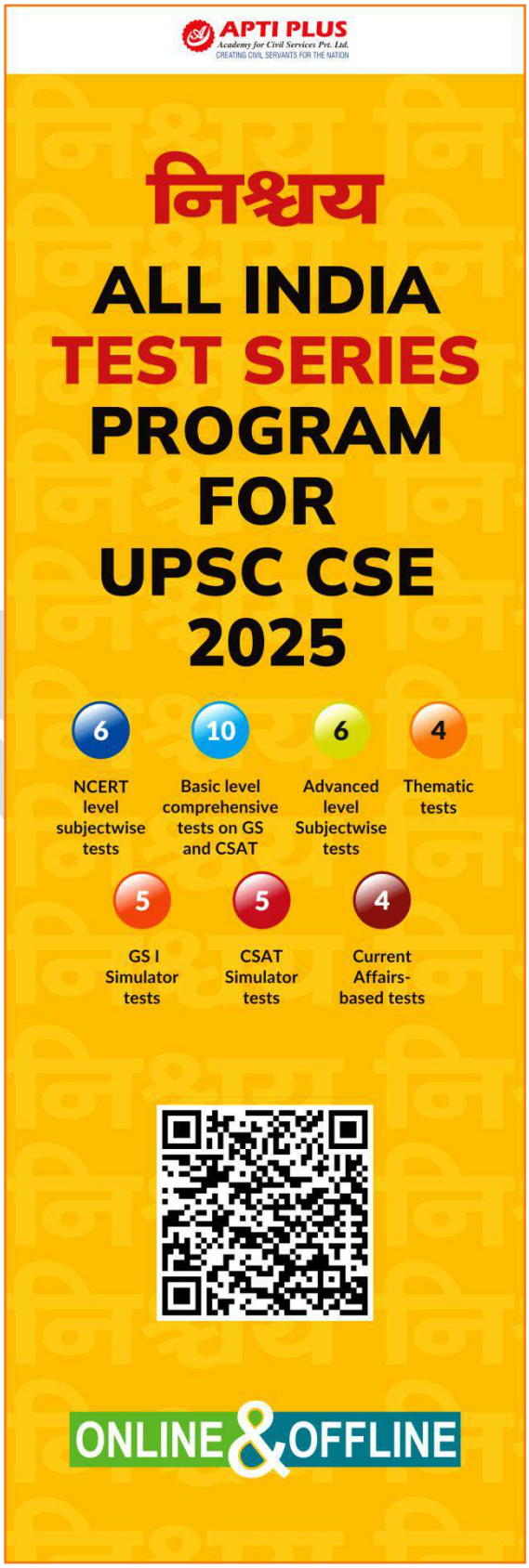
The Indian Constitution, under **Article 341, allows the President to specify the castes, races, or tribes that are to be considered as Scheduled Castes.** These groups are entitled to certain reservations in education, employment, and political representation to address historical injustices and social disadvantages.

Arguments for Sub-Classification

- **Targeted Benefits:**
  - Sub-categorization can help to ensure that the most disadvantaged groups within the SC community receive targeted benefits and opportunities. This can help to address historical injustices and promote social mobility.
- **Constitutional Basis:**
  - Article 16(4) of the Indian Constitution allows for reservations for backward classes who are inadequately represented in state services.
  - Some argue that sub-categorization is a logical extension of this provision, as it can help to ensure that the most disadvantaged sections of the SC community are adequately represented.
- **Promoting Social Justice:**
  - Sub-categorization can be seen as a step towards achieving greater social justice by addressing the specific needs of underprivileged groups within the SC community.
- **Addressing Historical Inequities:**
  - Many SC communities have faced centuries of discrimination and marginalization.
  - Sub-classification can target specific groups that have been disproportionately disadvantaged, ensuring they receive a fair share of reservation benefits.
- **Improving Representation:**
  - It can enhance the representation of the most marginalized SC communities in government and educational institutions, leading to a more inclusive and diverse society.

Arguments against Sub-Classification

- **Division within the Community:**
  - Critics argue that sub-categorization could lead to divisions within the SC community, as different groups may compete for limited resources and opportunities. This could compromise the unity and solidarity of the SC community.
- **Potential for Misuse:**
  - There is a risk that sub-categorization could be misused for political purposes, with some groups being favoured over



others based on political considerations rather than genuine needs.

- **Administrative Challenges:**
  - Implementing sub-categorization could be administratively complex and costly. It would require the collection of data on the social and economic status of different SC groups, as well as the development of new reservation policies.
- **Political Manipulation:**
  - Some fear that sub-classification could be used for political gain, with ruling parties manipulating the process to benefit their supporters.

Challenges for Sub-Classification

- **Lack of Data:**
  - One of the major challenges in implementing sub-categorization is the lack of reliable data on the social and economic status of different SC groups. This makes it difficult to identify the most marginalized communities and allocate resources accordingly.
- **Defining Criteria:**
  - Determining the criteria for sub-categorization can be a complex and contentious issue. There is a risk that the criteria may be arbitrary or biased, leading to further divisions within the SC community.
- **Implementation Challenges:**
  - Implementing sub-categorization policies can be difficult, especially in states with large and diverse SC populations. Ensuring that the benefits of sub-categorization reach the intended beneficiaries can be a significant challenge.
- **Political Interference:**
  - Sub-categorization could be subject to political interference, with politicians manipulating the process to benefit their constituencies. This could undermine the fairness and effectiveness of the policy.
- **Social Divisions:**
  - Sub-categorization could result in social divisions within the SC community, leading to resentment and competition among different groups.

To ensure the success of sub-categorization, it is essential to

- **Conduct Comprehensive Research:** Gather comprehensive data on the social, economic, and educational conditions of different SC groups to inform the sub-classification process.
- **Establish Transparent Criteria:** Develop clear and objective criteria for sub-classification, based on factors such as historical discrimination, socio-economic backwardness, and educational attainment.
- **Implement Sub-Categorization in a Phased Manner:** Sub-categorization should be implemented in a phased manner, starting with pilot programs in selected areas to test its effectiveness and address any potential challenges.
- **Monitor and Evaluate Outcomes:** The outcomes of sub-categorization should be regularly monitored and evaluated to ensure that it is achieving its intended goals and addressing the needs of the most marginalized groups within the SC community.
- **Promote Inter-Group Dialogue:** Promote dialogue and cooperation among different SC groups to build trust and understanding.
- **Broad Consultation:** Engaging with a wide range of stakeholders, including SC representatives, civil society organizations, and experts, to ensure that sub-categorization is implemented fairly and equitably.

Conclusion

- The sub-classification of Scheduled Castes in reservations is a complex issue that can address historical inequities and promote social justice but also raises concerns about

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divisions within the SC community and administrative challenges. The success of this policy depends on careful implementation, transparent criteria, and continuous monitoring.

1.2 LATERAL ENTRY

Context

- The Union Public Service Commission (UPSC) has initiated a new round of lateral recruitments, targeting professionals from the private sector and other fields to fill senior roles in the Indian bureaucracy.

Overview of the UPSC

- It is **established under Articles 315 to 323 of the Indian Constitution**, it operates independently to ensure fairness and transparency in recruitment processes.
- **Structure:** It consists of a Chairman and members appointed by the President of India. The exact number of members is not specified in the Commission.
- **Roles and Functions:** The UPSC is responsible for conducting examinations for recruitment to various civil services, advising the President on recruitment-related matters, and ensuring that the selection process is merit-based.
- **Independence:** Financial autonomy is guaranteed, as the salaries and expenses of the UPSC are charged to the Consolidated Fund of India, ensuring independence from governmental influence.

What is Lateral Entry?

- Lateral entry refers to the **recruitment of experienced professionals from various sectors, such as private industry, academia, and public enterprises, directly into senior government roles.**
  - Instead of rising through the ranks from lower bureaucratic positions, these individuals are appointed to roles like Joint Secretary, Director, or Deputy Secretary based on their specialized knowledge and experience.
- **Scope and Eligibility:** The current round invites applications for senior positions in 24 Union government ministries. Professionals from the private sector are recruited on a contract basis, while those from public sector undertakings and state governments are appointed on deputation.
- **Experience and Age Requirements:**
  - **Joint Secretary:** Minimum 15 years of relevant experience, aged 40-55.
  - **Director:** Aged 35-45.
  - **Deputy Secretary:** Aged 32-40.
- **Tenure:** The initial appointment is for three years, with a possible extension of up to five years based on performance.
- Since the introduction of lateral entry in 2018, 63 appointments have been made, with a mix of private-sector professionals and public-sector appointees filling various roles.

Why is Lateral Entry Important?

- **Introduce New Expertise:**
  - The primary goal is to bring in professionals with domain-specific skills that are not always present within the traditional bureaucratic system.
  - For example, a cybersecurity expert can provide invaluable insights into digital security challenges that a traditional bureaucrat might not be equipped to handle.
- **Increasing Efficiency:**
  - By integrating professionals with fresh perspectives and innovative approaches, the government hopes to break away from routine and predictability. This can lead to more effective governance and better problem-solving.
- **Filling Skill Gaps:**

- Home government positions require specialized knowledge that is rare among career bureaucrats. Lateral entry helps fill these gaps by bringing in experts with the necessary skills and experience.

Historical Context and Case Study

- Lateral entry is **not entirely new in India**. Notable figures like Dr Manmohan Singh and Montek Singh Ahluwalia were brought into government roles from outside the traditional civil service.
  - Dr Singh transitioned from being an economist to becoming India's Finance Minister, while Ahluwalia served as the Deputy Chairman of the Planning Commission. These examples highlight the potential success and benefits of such entries.
- Internationally, countries like Singapore and the United Kingdom have successfully implemented lateral entry to enhance their governance.

Arguments in Favor

- **Enhanced Policy Making:** Experts with specialized knowledge can lead to more informed and effective policy decisions. For instance, a technology expert could improve digital governance and cyber security.
- **Increased Efficiency:** Lateral entrants bring new ideas, fostering a more competitive and dynamic environment. This can help break the routine of the traditional IAS career path.
- **Addressing Officer Shortages:** With a shortage of IAS officers, lateral entry provides a solution by filling critical positions with qualified individuals from other sectors.
- **Historical Success:** Institutions like the Reserve Bank of India and the Planning Commission have benefited from lateral entry, demonstrating its potential advantages.
- **Modernizing the Bureaucracy:** Fresh perspectives can help the government navigate contemporary challenges more effectively.

Arguments Against

- **Threat to Neutrality:** There are concerns that lateral entry might compromise the impartiality of the civil service, with fears that politically or corporately connected individuals might be favoured.
- **Impact on Morale:** Traditional bureaucrats might feel demoralized seeing outsiders fill senior positions, potentially affecting the overall morale of the existing workforce.
- **Constitutional Concerns:** Critics argue that bypassing the UPSC's traditional recruitment process might compromise its authority and established practices.
- **Lack of Ground-Level Experience:** Lateral entrants might lack the on-ground experience crucial for effective policy implementation.
- **Nepotism Risks:** There are worries about nepotism and corruption, as influential corporate groups might place their allies in government positions.

Addressing Concerns and Ensuring Effectiveness

- **Develop Clear Guidelines:** Establish detailed criteria for selection and roles to ensure transparency and fairness.
- **Implement Robust Integration Programs:** Provide orientation to help lateral entrants adapt to public sector values and processes.
- **Monitor and Evaluate Performance:** Regular performance reviews can ensure that lateral entrants are contributing positively and making necessary adjustments.
- **Ensure Reservation Compliance:** Strategies should be developed to respect and integrate reservation policies, ensuring diverse representation in high-level roles.
- **Promote Long-Term Commitment:** Encourage lateral entrants to view their roles as long-term opportunities, aligning their skills with public administration goals.

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1.3 SHORT ARTICLES

SC Verdict in Alderman Issue

Context

- The Supreme Court's recent decision upholding the Lieutenant Governor's (LG) power to appoint aldermen to the Municipal Corporation of Delhi (MCD) has significantly altered the political landscape in the national capital.

About Aldermen

- Aldermen are appointed members of a city council or municipal body.
- In the MCD, aldermen are selected based on their experience and knowledge, as outlined in Section 3 of the Delhi Municipal Corporation (DMC) Act, 1957.

Role and Powers of Aldermen

- **Nomination Criteria**: Aldermen must be over 25 years old and possess specialized knowledge or experience relevant to municipal governance.
- **Voting Rights**: While they cannot vote in general MCD meetings, they have the right to vote in Wards Committee meetings and can stand for election to the MCD Standing Committee.
- **Standing Committee Functions**: This committee is crucial for approving significant contracts, managing the budget, and overseeing the appointments of key MCD officials.

Prerana Programme

Context

- At the 78th Independence Day celebrations in New Delhi, the Union Minister for Education engaged with students, teachers, and parents involved in the Prerana Programme.

About Prerana Program

- The **Ministry of Education has launched the 'Prerana program' in January 2024.**
- It is a **weekly residential educational initiative for students from classes 9 to 12.**
- It is organized **at the Vernacular School in Vadnagar, Gujarat.**
- It blends India's rich historical legacy with contemporary educational practices.
- Each week, 20 students (10 boys and 10 girls) from across India are selected to participate.
- Teachers involved in the Prerana Program come from KendriyaVidyalayas and Jawahar Navodaya Vidyalayas.
    - They receive specialized training at the Indian Institute of Technology (IIT) Gandhinagar.

Curriculum revolves around nine value-based topics:

- **Swabhiman and Vinay:** Focuses on the importance of self-respect and humility.
- **Shaurya and Sahas:** Encourages students to face challenges with bravery.
- **Parishram and Samarpan:** Emphasize the value of diligence and dedication.
- **Karuna and Sewa:** Promotes compassion and service to others.
- **Vividhta and Ekta:** Highlights respect for diversity and the importance of unity.
- **Satyanishtha and Shuchita:** Instills values of integrity and purity.
- **Navachar and Jigyasa:** Encourages innovative thinking and curiosity.
- **Shraddha aur Vishwas:** Builds faith and trust.
- **Swatantrata and Kartavya:** Balances freedom with responsibility.

The Program offers a variety of learning activities

- **Creative Projects:** Students create unique projects like portraits of national heroes using materials such as Rubik's cubes, fostering deep engagement with historical figures.

- **Innovative Learning:** Activities like developing a charkha that generates electricity bridge historical technologies with modern applications.
- **Historical and Cultural Exploration:** Visits to local archaeological sites and historical locations deepen students' appreciation for India's history.
- **Inspirational Stories:** The curriculum includes Gujarati folklore, such as the tale of Tana and Riri, to highlight cultural values.
- **Holistic Learning:** The program integrates yoga and mindfulness sessions to promote overall well-being.

Conclusion

- The Prerana Program represents a forward-thinking educational approach that integrates traditional values with contemporary practices. Its goal is to develop students academically and personally, nurturing leadership skills, cultural appreciation, and overall growth.

Right to Education (RTE) Act

Context

- The Delhi High Court has ordered the merger of school identification numbers (IDs) under the Right to Education (RTE) Act.

About the Right to Education Act (RTE)

- The **86th Constitutional Amendment Act 2002 made the Right to Education a fundamental right**, requiring the state to provide free and compulsory education to children.
    - The **Right to Education Act was enacted in 2009**, to provide free and compulsory education for children aged 6-14.
- **It reserves 25% of private unaided school seats for children from Economically Weaker Sections (EWS) and Disadvantaged Groups (DG),** ensuring access to quality education.
    - These provisions aim to provide equal opportunities for all children, regardless of their economic or social background, by ensuring equal opportunities in private unaided schools.

Annual Status of Education Report (ASER) 2023

- **More than 98% of children in the 6–14 age groups were enrolled in schools in 2022.**
- About 25% of youth in rural India cannot read a Std II level text fluently in their regional language, and 42% cannot read easy sentences in English.
- **Over 50% of surveyed youths struggle with basic arithmetic.**

Key Highlights of the RTE Act

- The RTE Act **guarantees free and compulsory education for all children**, ensuring they can access and complete elementary education.
- It **allows age-appropriate admission** for children who have never attended school or dropped out.
- The Act sets minimum standards for schools, including student-teacher ratios, infrastructure requirements, and teacher qualifications.
- **It prohibits certain practices such as physical punishment, mental harassment**, capitation fees, and screening procedures for admission.
- The Act emphasizes the development of a curriculum that aligns with constitutional values, promotes holistic child development, and is child-friendly, to encourage learning over rote memorization.

Challenges

- **Many schools still lack basic infrastructure**, hindering the learning environment, especially for female students.
- There is also a shortage of trained teachers in rural areas.
- **The effectiveness of the RTE Act's implementation varies across states**, with some fully embracing the provisions while others lag due to political, economic, or administrative reasons.

Way Forward

- There is a **need for strengthening teacher training, community engagement, focusing on learning outcomes**, and bridging infrastructure gaps, particularly in rural and underdeveloped areas.
- Adequate funds should be allocated to ensure all schools meet the RTE norms.

1.4 SNIPPETS

Topics	Details
Reset Programme	• The **Union Minister of Youth Affairs and Sports has launched** the Retired Sportsperson Empowerment Training (RESET) Programme**to assist retired sports persons in transitioning into new career paths.** • The program aims to improve their employability and integration into various professional fields by providing the necessary knowledge and skills.
D Voters	• The **Chief Minister of Assam announced 1.2 lakh 'D' voters**, as part of the electoral and legal process. • The term 'D' voters refers to **individuals whose Indian citizenship is under question**. • The term was **introduced in 1997 by the Election Commission of India** to ensure that only eligible citizens are listed on the electoral rolls. • The **term 'Doubtful voter' is not explicitly defined in the Citizenship Act of 1955 or the Citizenship Rules of 2003.**
Nandini Sahakar Yojana	• The Union Minister of Cooperation updated the Rajya Sabha on the Nandini Sahakar Scheme. • The **Nandini Sahakar Scheme was launched by the National Cooperative Development Corporation (NCDC) to support women's cooperatives**. o It provides interest rate reductions—2% for new and innovative projects, and 1% for other activities. • There is **no upper limit on the financial support provided**. Women cooperatives can receive as much aid as needed, making it easier for them to undertake large or ambitious projects. • To qualify, a **cooperative must be registered under a State or Central Cooperative Act and have at least 50% women members**. It should also have been **operational for a minimum of three months.**
Waqf	• The Union **government introduced the Waqf (Amendment) Bill 2024**, to amend the Waqf Act1995. • A Waqf is a **property donated by Muslims for religious, or charitable purposes.** • **Once designated as a Waqf, the status is permanent and cannot be changed.** • In India, the Waqf Act of 1995 governs these properties, replacing previous laws like the Mussalman Wakf Act of 1923 and the Central Waqf Act of 1954. • **Each state has a Waqf Board responsible for managing and overseeing Waqf properties**. • **Disputes are resolved by a Waqf Tribunal** consisting of a judicial officer, civil services officer, and expert in Muslim law.

Jiyo Parsi Scheme	• The **Union Minister of Minority Affairs introduced the Jiyo Parsi scheme portal** to address the decreasing population of the Parsi community in India. • Jiyo Parsi scheme is a **Central Sector Scheme**, meaning it is funded by the central government. • The key features of the scheme include **financial assistance for fertility treatments,** childcare, and support for elderly members of the community.
Nats 2.0	• The **Union Education Minister launched the National Apprenticeship Training Scheme (NATS) 2.0 Portal**. • It aims to provide a **centralized platform for managing apprenticeship programs** and disburses Rs 100 crore in stipends to **improve employability** through improved registration, application, and management of apprenticeships.
Dark Tourism	• Kerala Police have issued a warning against dark tourism in Wayanad, Kerala, following a landslide that claimed over 150 lives. • Dark tourism refers to the **practice of visiting locations associated with death, disaster, or suffering, including sites where significant tragedies or historical events have occurred.** • It can offer educational and reflective experiences but has ethical concerns such as interference with rescue efforts and commercialization of tragedy. • Indian hotspots include Cellular Jail in Port Blair, 'Skeleton Lake' in Uttarakhand.
Hema Committee Report	• The Hema Committee report highlighted **issues such as sexual exploitation, illegal bans, discrimination, and poor working conditions in the Malayalam cinema industry**. • It reported wage disparity in the industry, with female actors earning less than their male counterparts, and described inhumane working conditions for women.
Senior Advocates	• The Supreme Court recently designated 39 lawyers as senior advocates. • Senior advocates are **legal experts with extensive knowledge in the field of law and are often involved in high-profile cases.** • The **designation of a Senior Counsel is governed by certain legal provisions, such as Section 16(2) of the Advocates Act, 1961** and Rule 2(a) of Order IV of the Supreme Court Rules, 1966. • To become a Senior Advocate, the Chief Justice and other judges of the court must believe that the advocate is suitable for the position, they must have exceptional legal expertise, and their consent must be obtained.
Article 311	• The Lieutenant Governor of Jammu and Kashmir has used Article 311 of the Indian Constitution to dismiss six government employees. • Article 311 **protects civil servants**, ensuring that no civil servant can be dismissed, removed, or demoted without proper procedures being followed. • It was **amended in 1976 to clarify that if a penalty is imposed after a hearing, there is no need for a separate hearing** to determine the penalty amount.
Right To Disconnect	• **Australia has introduced a "right to disconnect" law, allowing employees to refuse work-related communication outside their working hours without penalties**. • The concept has been discussed globally, with France, Italy, and Belgium enacting laws to encourage businesses to respect workers' off-hours. • In India, the **Right to Disconnect Bill was introduced in 2018, but failed to pass the legislative process**.

Anubhav Awards	• The 7th Anubhav Awards ceremony was organized recently. • The **Department of Pension and Pensioners' Welfare (DoPPW) introduced the Anubhav Awards in 2016 to encourage sharing of government service experience**. • The main goal is to create a knowledge repository for future administrative reforms and enhance governance practices. • The Anubhav Awards include a medal, certificate, and monetary incentive of Rs. 10,000.
Plea Bargaining	• The **Ministry of Law and Justice Report revealed that only 0.11% of criminal cases in 2022** were resolved through plea bargaining. • Plea Bargaining is a **legal practice where an accused person files a petition for a lesser charge or to receive a reduced sentence in exchange for avoiding a full trial**. • It was **introduced in 2005 to speed up the legal process and save court resources**. • It is **only applicable to crimes punishable by up to seven years in prison** and does not cover serious offences like those involving women, children, or socio-economic crimes.
Bail Provision For First-Time Offenders	• The Supreme Court ruling has **relaxed bail provisions for first-time offenders under the new criminal law Bharatiya Nagarik Suraksha Sanhita (BNSS).** • The order could have a major impact on India's undertrial prisoners, as **around 75% of the prisoners are undertrials.**
PRAGATI	• The Prime Minister of India chaired the 41st PRAGATI meeting. • PRAGATI was **launched by the Prime Minister in 2015** to establish good governance practices among stakeholders by combining digital data management, video conferencing, and geospatial technology. • **It allows citizens to raise concerns directly with the government** and monitors key government programs to ensure they are implemented to schedule and targets. • The Prime Minister holds a meeting every fourth Wednesday at 3:30 PM. • The **Three-Tier System involves the Prime Minister's Office (PMO), Union Government Secretaries, and the Chief Secretary of State.**
New Definitions Of Literacy	• According to the Ministry of Education (MoE) new guidelines, **a state or territory is considered fully literate when 95% of its population is literate.** • Literacy involves more than just reading and writing, including understanding, interpreting, and creating information. • **India's literacy rate was 72.9% in the 2011 Census**, with male literacy at 80.89% and female literacy at 64.64%.

1.5 ADDITIONAL TOPICS FOR READING FROM IASGYAN WEBSITE

TOPIC NAME	UPLOADED ON IAS GYAN WEBSITE ON:
Anti Conversion Law	8th August, 2024
Joint Parliamentary Committee (Jpc)	16th August, 2024
Parties, Serious Crimes And The Need For Judicial Clarity	16 Aug 2024
Parental Rights On Child	19th August, 2024

2. INTERNATIONAL RELATIONS

2.1 INDIA JAPAN 2+2

Context

- India and Japan held their third "2+2" Ministerial Dialogue in New Delhi.

What is the "2+2" Dialogue?

- The "2+2" Ministerial Dialogue is a **diplomatic framework that started in 2018, between India and the United States.**
- **In 2019, Japan joined this format**, followed by Australia and Russia.
- This dialogue format involves the **Foreign and Defence Ministers of the participating countries,** emphasizing both diplomatic and military dimensions of their relationship.

Japan

- Japan is an archipelago with **four major islands - Hokkaido, Honshu, Shikoku, and Kyushu**.
- It is **surrounded by the Sea of Japan, the Pacific Ocean, the Sea of Okhotsk, and the East China Sea**.
- About 73% of Japan is mountainous, with features like the Japanese Alps, Chugoku Mountains, and Kyushu Mountains.
- Being on the Pacific Ring of Fire, Japan experiences earthquakes and volcanic eruptions, with notable volcanoes being Mount Fuji and Mount Aso.

Key Discussions during the 3rd India and Japan "2+2" Ministerial Dialogue

- **Commitment to International Order:** Both India and Japan highlighted their commitment to a rules-based international order. This means respecting the principles of the United Nations Charter, including sovereignty and territorial integrity.
- **Free and Open Indo-Pacific:** Both countries are committed to the vision for a "free, open, and inclusive Indo-Pacific", which advocates for openness and respect for international law. This shared vision aims to counteract any forces that might threaten regional stability.
- **Regional and Global Cooperation:** India and Japan highlighted their collaboration within the Quad, a strategic grouping that also includes Australia and the United States.
    - The Quad aims to promote security and stability in the Indo-Pacific region. Both nations expressed their intent to strengthen this partnership to address regional challenges.
- **Expanding Cooperation:** They also discussed expanding cooperation into new areas such as space, cyber security, and defence technology, including robotics and communication systems.
- **Women, Peace, and Security:** Recognizing the role of women in peace building, both nations agreed on integrating gender inclusivity into their peacekeeping efforts.
- **Counter-Terrorism Efforts:** Both countries highlighted their commitment to combating terrorism and violent extremism. They emphasized the need for global cooperation to address threats from groups such as Al-Qaeda and ISIS.
- **Future Collaborations:** The ministers agreed to revise the 2008 Joint Declaration on Security Cooperation to address

contemporary security challenges. They also planned the next "2+2" meeting in Japan.

Challenges

- **Trade Imbalances:** Bilateral trade reached approximately $21.96 billion in the fiscal year 2022-2023, but India faces a trade deficit with Japan, with more imports than exports. Addressing market access issues and improving trade agreements can help balance this trade.
- **Project Execution:** Collaborative projects like Mumbai-Ahmedabad, face delays due to bureaucratic red tape and land acquisition issues. Streamlining processes and providing dedicated project management support can improve execution.
- **Geopolitical Tensions:** Regional tensions and differing strategies on issues like China's Belt and Road Initiative can impact collaboration. Aligning strategies and strengthening trilateral cooperation with the United States can address these challenges.

Way Forward

- **Enhancing Economic Cooperation:** Focus on reducing trade barriers and improving market access for Indian businesses in Japan.
- **Improving Project Execution:** Streamline bureaucratic processes and address land acquisition challenges.
- **Strengthening Strategic Cooperation:** Align strategies on regional security and deepen trilateral cooperation with the United States.
- **Promoting Cultural Exchanges:** Increase educational and cultural programs to bridge gaps and enhance mutual understanding.

Conclusion

- The third India-Japan "2+2" dialogue highlights the growing strategic partnership between the two nations. By addressing regional security challenges, enhancing defence cooperation, and navigating geopolitical complexities, India and Japan are committed to strengthening their alliance and contributing positively to regional and global stability.

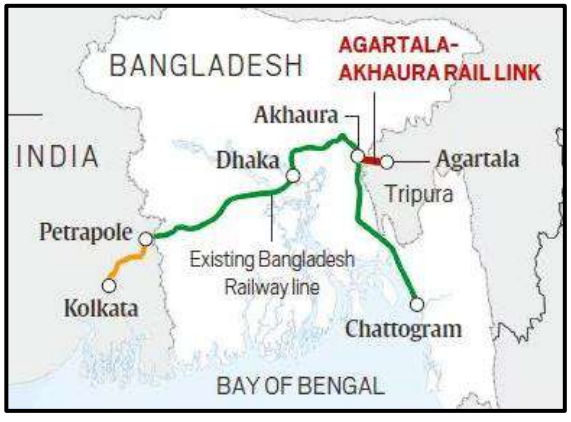
2.2 INDIA-BANGLADESH RELATIONS

Context

- Sheikh Hasina, Bangladesh's Prime Minister, has resigned and left Bangladesh due to huge anti-government protests.

Details

- She arrived in India and is reportedly planning to seek asylum in the UK. However, her asylum plans are uncertain due to calls for an independent UN-led investigation into the violence that led her to leave Bangladesh.
- After consultations with various political parties, an interim government was formed under Nobel Prize winner Muhammad Yunus.
- Her resignation as Prime Minister of Bangladesh after being in power for more than 15 continuous years could significantly impact the relationship between India and Bangladesh.



Impact on India

- During Hasina's tenure, the two nations had a strong partnership marked by economic cooperation and strategic collaborations.

However, **her departure could disrupt ongoing trade agreements, infrastructure projects, and overall bilateral relations.**

- India and Bangladesh have a comprehensive trade relationship, with **bilateral trade reaching $13 billion in the financial year 2023-24.**
  - Bangladesh is a major market for Indian cotton, **absorbing 34.9% of India's cotton exports,** valued at about $2.4 billion.
  - India exports petroleum products and cereals to Bangladesh, while Bangladesh exports ready-made garments to India, totaling $391 million in 2024.
- Potential Free Trade Agreement (FTA) discussions between India and Bangladesh began in October 2023, aiming to reduce or eliminate customs duties on traded goods and ease trade regulations.
- **India has provided Bangladesh with $8 billion in lines of credit since 2016**, for developing infrastructure such as roads, railways, shipping, and ports.
- Recent developments, such as the **Akhaura-Agartala Cross-Border Rail Link and Khulna-Mongla Port Rail Line, could face delays** or operational challenges due to disruptions in Indo-Bangladesh relations.

Way Forward

- India and Bangladesh should **engage in diplomatic channels** to understand each other's priorities and concerns.
- **India should support political stability and economic recovery in Bangladesh** can promote goodwill and strengthen bilateral relations.
- Strengthening trade relations by continuing negotiations on the Free Trade Agreement (FTA).
- **Exploring new trade opportunities**, and diversifying exports and imports.
- Encouraging investment in sectors with complementary strengths can help sustain economic engagement.
- **Strengthen infrastructure and connectivity** by completing ongoing projects and expanding connectivity.
- **Focus on regional security** through collaborative security efforts, particularly in counter-terrorism and border security.
- **Strengthen intelligence sharing and coordination** to address security challenges and prevent potential spillover of unrest into the region.
- **Promote people-to-people ties by supporting cultural and educational exchanges**, such as student exchange programs and joint research projects.
- **Encourage tourism to enhance people-to-people interactions** and improve travel infrastructure.
- **Develop contingency plans to manage potential disruptions** in bilateral relations and maintain flexible diplomacy to adapt to the evolving political landscape in Bangladesh.

2.3 A CHANGE IN INDIA'S POWER EXPORT RULES

Context

- India recently amended its power export rules to allow rerouting electricity to domestic grids if partner countries, like Bangladesh, delay payments.

Context of the Amendment

- Amendment to power export rules is a **strategic move aimed at mitigating risks associated with political and economic instability in neighbouring countries.**

- With the amendment, Indian power exporters can now reroute electricity to domestic grids in the event of payment delays from partner countries.
    - This reduces dependency on external markets and enhances operational stability by providing a safeguard against financial or political uncertainties in partner nations.

Godda Project

- The **Godda power plant in Jharkhand**, operated by Adani Power, is India's first transnational power project dedicated entirely to supplying another country—in this case, Bangladesh.
- With a capacity of 1,496 MW, the Godda plant operates under a 25-year Power Purchase Agreement (PPA) with the Bangladesh Power Development Board (BPDB), which began in 2017. However, the project has faced several issues:
    - **High Costs:** The cost of coal imported from Australia's Carmichael mine, used at the Godda plant, has been significantly higher than what BPDB pays for coal at its plants.
    - **Maintenance Charges:** The PPA includes high capacity and maintenance charges regardless of actual power generated, which BPDB has found excessive.
    - **Payment Delays:** Internal auditing processes within BPDB have led to payment delays to Adani Power, necessitating regulatory flexibility.

India's Power Sector

- As of January 31, 2024, **India's installed power capacity was 429.96 GW, with renewable energy accounting for 42.3%.**
- India stands 4th globally in Renewable Energy Installed Capacity, 4th in Wind Power capacity and 5th in Solar Power capacity.
- Government policies, like the PM-Surya Ghar Yojana for rooftop solar installations, increased budget allocations for green energy, and the National Smart Grid Mission, aim to promote sustainable power and renewable energy generation.

Challenges and Future Directions

- **Transmission and Distribution Losses:** India's electricity transmission and distribution losses are high compared to the global average, affecting efficiency and reliability.
- **Financial Health of Discoms:** Distribution companies (Discoms) struggle with debt and subsidy burdens, impacting their ability to invest in new technologies and infrastructure.
- **Reliance on Fossil Fuels:** Over 70% of India's electricity in 2023 was generated from thermal power plants, raising concerns about environmental sustainability.
- **Integration of Renewable Energy:** Integrating renewable sources into the grid is challenging due to their intermittent nature and the need for advanced technology and infrastructure.
- **Regulatory and Policy Issues:** Inconsistent policies and frequent regulatory changes create uncertainty for investors and hinder the implementation of renewable energy projects.

Way Forward

- India needs to upgrade infrastructure, improve the financial health of Discoms, promote renewable energy, strengthen policy and regulation, and invest in innovation and research.
- Initiatives like smart grid technology, energy storage solutions, and clear regulatory frameworks will be crucial for ensuring the sustainable growth of India's power sector.

2.4 AUKUS DEAL

Context

- The AUKUS agreement between Australia, the United Kingdom, and the United States (AUKUS) represents a strategic shift in the Indo-Pacific region.

About AUKUS Partnership

- **AUKUS was announced in September 2021** as a trilateral security agreement.
- The partnership aims to enhance regional security in the Indo-Pacific, with a focus on nuclear-powered submarines and advanced military technologies.
- **Pillars of AUKUS:**
  - **Pillar 1:** Focuses on the acquisition of nuclear-powered submarines by Australia.
  - **Pillar 2:** Involves collaboration on advanced technologies, including AI, quantum computing, hypersonic weapons, and cyber capabilities.

Concerns

- **Arms Race and Regional Stability:**
  - The deal could trigger an arms race, increasing tensions in the Indo-Pacific.
  - Neighbouring countries might respond by boosting their military capabilities.
- **China's Reaction:**China views AUKUS as a threat to its strategic interests, potentially leading to increased military activities and fortifications in the region.
- **Nuclear Non-Proliferation Concerns:**The transfer of nuclear technology raises concerns about adherence to the Treaty on the Non-Proliferation of Nuclear Weapons (NPT).
- **Economic and Environmental Risks:**The introduction of nuclear-powered submarines raises concerns about nuclear safety and potential environmental impacts in the region.

Should India Join AUKUS?

Potential Benefits

- **Balancing China's Influence:** India might view AUKUS as a means to counterbalance China's military presence in the Indo-Pacific.
- **Strengthening Alliances:** AUKUS could reinforce India's strategic relationships and enhance regional security.
- **Naval Capabilities:** Joining could encourage India to accelerate its development of nuclear-powered submarines.

Implications for India

- **Strategic Autonomy:** Joining AUKUS might require India to align more closely with U.S. foreign policy, potentially compromising its strategic autonomy.
- **Regional Reactions:** India's participation could provoke reactions from neighbouring countries, particularly China and Pakistan.
- **Nuclear Arms Race:** Involvement in AUKUS could lead to a regional nuclear arms race, particularly if it influences India's nuclear policy.
- **Impact on Southeast Asia:** India's involvement could affect its relations with Southeast Asian countries, some of which might view increased military presence with concern.

What India Needs to Do?

- **Assess Strategic Benefits and Risks:** Evaluate how joining AUKUS might enhance or compromise India's regional security and strategic autonomy.
- **Boost Indigenous Defense Capabilities:** Increase investment in domestic defence technologies to reduce reliance on foreign capabilities.
- **Consult Regional Partners:** Engage in dialogues with Quad members and regional players to gauge the implications of joining AUKUS.

2.5 INTERNATIONAL CONFERENCE OF AGRICULTURAL ECONOMISTS (ICAE)

Context

- The 32nd International Conference of Agricultural Economists (ICAE) was held in Delhi from August 2-7, 2024.

Significance of the Conference

- The insights and recommendations shared during the conference are often used to guide policy decisions that impact millions of people globally.
- **This year's theme, "Transformation Towards Sustainable Agri-Food Systems,"** emphasized the urgent need for sustainable agricultural practices in the face of growing global challenges like climate change, food insecurity, and economic slowdowns.

About the International Conference of Agricultural Economists (ICAE)

- It is a **triennial event** that brings together a diverse group of stakeholders, including academics, government officials, industry leaders, and international organization representatives.
- The conference serves as a hub for exchanging ideas, sharing research findings, and discussing global challenges related to agriculture, food security, rural development, and sustainability.

Key Findings from the Conference

A significant portion of the conference was dedicated to **comparing the agricultural experiences of 20 major Indian states with those of 15 African countries over the period from 2004-05 to 2019-20**. The findings from this comparative analysis revealed some critical insights:

Debt and Agricultural Spending:

- Both regions face high debt service ratios, which significantly reduce their ability to invest in agriculture.
- Instead, funds are often redirected towards social protection programs, which, while necessary, limit the resources available for agricultural development.

Underfunding of Agriculture:

- African countries, in particular, tend to underfund agriculture compared to Indian states.
- This lack of investment hampers productivity and exacerbates issues like child malnutrition.

Investment in R&D:

- Both regions are under investing in agricultural research and development (R&D) and extension services.
- Increasing public spending in these areas is crucial for enhancing productivity and improving child nutrition outcomes.

Reforming Subsidies:

- The study highlighted the need for subsidy reforms.
- Redirecting resources towards infrastructure development and R&D rather than traditional subsidies could significantly boost agricultural growth and help reduce child malnutrition.

During the conference, several key recommendations were made to address the challenges highlighted

Enhancing Cooperation:

- Strengthen collaboration between India and Africa in agricultural development and food security.
- Sharing best practices, technologies, and innovations can help both regions tackle their food security challenges more effectively.

Increasing Investment in Agriculture:

- Both India and African countries need to increase their investment in agriculture,

focusing on R&D, infrastructure, and extension services.
- This will enhance productivity, improve food security, and support nutritional outcomes.

Global Advocacy:
- Leverage platforms like the G20 to advocate for global food security, climate resilience, and bioeconomy.
- Engaging with developing countries to address climate change and support global food systems transformation is crucial.

Implementing Policy Reforms:
- Reform agricultural subsidies and reallocate resources to areas that can significantly impact growth and nutrition.
- Effective policies and investments are needed to create sustainable agricultural systems.

Promoting Innovation and Research:
- Encourage innovation and research in agriculture to address emerging challenges and improve food security.
- Investment in new technologies and methods can drive progress in agricultural development.

2.6 SHORT ARTICLES

Security of Supply Arrangement (SOSA)

Context
- The Indian Defense Minister signed an agreement on the Security of Supply Arrangement (SOSA) during his visit to the USA.

About the Security of Supply Arrangement (SOSA)
- It is a **bilateral agreement between India and the U.S. aimed at ensuring quick access to defence goods and services, even during emergencies or supply chain disruptions**.
- The agreement prioritises each country's defence-related needs, ensuring that if one country faces a shortage of critical supplies, the other will prioritise their support.
- **Both countries will collaborate on supply chain disruptions**, ensuring operational efficiency and handling any shortfalls.
- A **Code of Conduct will be established between the government and industry**, ensuring Indian companies priorities U.S. defence needs.
  - In exchange, the U.S. will provide assurances about necessary supplies through its Defense Priorities and Allocations System (DPAS) to India.
- It supports the broader U.S.-India Defense Technology and Trade Initiative (DTTI), which focuses on co-development and co-production of defence technologies.

2.7 SNIPPETS

Topics	Details
Court Of Arbitration For Sport (CAS)	• The Court of Arbitration for Sport upheld Vinesh Phogat's disqualification from the Paris Olympics due to her weight • It is an **independent institution that resolves disputes in the sports world through arbitration.** • Its main objective is to offer a fair and effective method for settling conflicts among athletes, sports organizations, and other involved parties in sports. • It is **operated under the International Council of Arbitration for Sport (ICAS).**

	• It **is headquartered in Lausanne, Switzerland**, with additional offices in New York City, Sydney, and temporary courts in Olympic host cities.
St Martin Island	• St Martin's Island is news following the resignation of the former Bangladesh Prime Minister. • It is situated about 9 kilometres from the **southern tip of Bangladesh's Cox's Bazar-Teknaf peninsula.** • It is located in the northeastern Bay of Bengal, **close to the Bangladesh-Myanmar border**. • The island is **mostly flat, with an elevation of just 3.6 meters above sea level.** • It is **Bangladesh's only coral island** and is known for its unique marine life, including sea turtles.
Hezbollah	• Hezbollah is in the news as Israel is taking action against the group. • Hezbollah, a Shiite Islamic militant organization **based in Lebanon**, is the world's most heavily armed non-state actor. • It is inspired by the Iranian Islamic Revolution and **supported by Iran's funds and training.** • Its main goals include **opposing Israel, Western influence in West Asia**, and supporting the Syrian government in the region.
Axis of Resistance	• The 'Axis of Resistance' is in the news due to conflict in West Asia. • The **'axis of resistance' is a coalition of Iranian-backed groups.** • The group includes Hezbollah, Hamas, Palestinian Islamic Jihad (PIJ), and Houthis, all Shiite militant organizations. • The **formation of the 'axis of resistance' dates back to the Iranian Revolution of 1979,** which allowed radical Shia Muslim clerics to gain power. • The group aims to **deter threats from Israel and the US**, which Iran sees as a means for strategic interests.

2.8 ADDITIONAL TOPICS FOR READING FROM IASGYAN WEBSITE

Topic Name	Uploaded On Ias Gyan Website On:
India Vietnam Relations	5th August, 2024
India's Refugee Policy	9th August, 2024
Geneva Conventions	19th August, 2024
Global South Summit 2024	21st August, 2024
South China Sea Tensions	22nd August, 2024
Pacific Islands Forum	29th August, 2024
India-Brazil Partnership	30th August, 2024

3. ECONOMY

1.1 RBI ISSUES FRAMEWORK FOR SELF-REGULATORY ORGANIZATIONS

Context

- Recently, the **RBI** introduced a **framework** for recognizing **Self-Regulatory Organizations (SROs)** in financial markets.
- This move aims to enhance compliance and create a consultative platform for policymaking.

What Is a Self-Regulatory Organization (SRO)?

- A **self-regulatory organization (SRO)** is a non-governmental entity empowered to create and enforce its own **industry** or **professional regulations and standards**.
- These organizations operate independently but may collaborate with government bodies to ensure **compliance and oversight**.

Purpose of Financial SROs

- In the financial sector, **SROs** like stock exchanges protect investors by establishing rules and standards that promote **ethics**, **equality**, and **professionalism**.
- They play a crucial role in maintaining **industry integrity** and **investor confidence**.

Authority of SROs

- **SROs** have the authority to create **binding regulations** and **standards** for their members.
- **Non-compliance** can result in penalties, including fines or expulsion.
- **SROs** may also set **membership requirements** like educational qualifications or ethical standards.
- Additionally, **SROs** often provide **educational resources** to investors on **business practices**, **fraud prevention**, and **risk mitigation**.

Role of SROs

- **SROs** will develop **best practices**, standards, and codes within the **RBI's regulatory framework**.
- Members can **voluntarily adopt these guidelines**, but they will not replace the existing regulatory framework.

Sector Improvement

- **SROs** must focus on improving their sectors and addressing key industry issues.
- They are responsible for setting **minimum standards** and establishing **conventions for professional market conduct**.

Collaboration with RBI

- **SROs** will work closely with the **RBI** to ensure compliance with regulatory guidelines.
- They are also expected to **detect early warning signals** in the market.

RBI's Authority

- The **RBI** retains the power to **revoke an SRO's recognition**.
- This action will occur if the **SRO's operations** harm **public interest** or deviate from its stated objectives.

1.2 'MODEL SOLAR VILLAGE'

Context

- The **Ministry of New and Renewable Energy** notified the scheme guidelines for the implementation of the '**Model Solar Village**' component under the **PM-Surya Ghar: Muft Bijli Yojana**.

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Background of PM-Surya Ghar: Muft Bijli Yojana

- Approved on **29th February 2024**, the **PM-Surya Ghar: Muft Bijli Yojana** aims to boost **solar rooftop capacity** and enable households to generate their own electricity. With an outlay of **₹75,021 crore**, the scheme will be active until **FY 2026-27**.

Features

- **Launch Date**: January 22, 2024
- **Objective**: Install rooftop solar panels on **1 crore households** to provide up to **300 units** of free electricity per month
- **Budget Allocation**: Over **₹75,000 crore**
- **Beneficiaries**: Poor and middle-class families with an income under **₹2 lakh per annum**
- **Free Electricity**: 300 units per month
- **Scheme Implementation**: **Ministry of New and Renewable Energy (MNRE)**
- **Subsidy Details**: Through the **Central Financial Assistance (CFA)** scheme of MNRE
- **Subsidy Amount**:
  - **1-2 kW**: ₹30,000 – ₹60,000
  - **2-3 kW**: ₹60,000 – ₹78,000
  - **Above 3 kW**: ₹78,000 (capped)
- **System Capacity**: Maximum of **10 kW** for rooftop solar installations
- **Power Purchase Agreement (PPA)**: **25-year agreement** with DISCOM

Benefits

- Free electricity up to **300 units per month**
- **Reduced electricity bills**
- **Increased energy independence**
- **Reduced carbon emissions**
- **Job creation**

Who Will Benefit

- Poor and middle-class families, especially in **remote areas** with high electricity costs

Model Solar Village Component

- The '**Model Solar Village**' component aims to establish one **Model Solar Village** per district across India.
- The initiative, with a financial outlay of **₹800 crore**, will provide each selected village with **₹1 crore** in

support.

Eligibility and Selection Process

- To qualify, a village must be a **revenue village** with a population over **5,000** (or **2,000** in special category states).
- Villages will be assessed on their **distributed renewable energy (RE) capacity** installed within six months of declaration by the **District Level Committee (DLC)**.
- The village with the highest RE capacity in each district will receive **₹1 crore** in central financial assistance.

Implementation and Oversight

- The scheme will be implemented by the **State/UT Renewable Energy Development Agency**, under the supervision of the **District Level Committee (DLC)**, ensuring effective transition to **solar-powered communities** and setting a benchmark for others across the country.

1.3 SEBI BOARD'S CODE ON CONFLICT OF INTEREST

Context

- Recently, Hindenburg Research alleged that SEBI Chairperson Madhabi Puri Buch had a stake in offshore entities connected to the Adani scandal. Buch and her husband clarified that these investments were made prior to her SEBI tenure and were properly disclosed.

SEBI Board's Code on Conflict of Interest

- **Objective**: Ensure **integrity** and **transparency** within the **Securities and Exchange Board of India (SEBI)**.
- **Recent Issue**: **Hindenburg Research** alleged that SEBI Chairperson **Madhabi Puri Buch** had a stake in **offshore entities** linked to the **Adani scandal**. Buch clarified that these investments were made before her SEBI tenure and were properly disclosed.
- **Definition of Conflict of Interest**: Any personal interest or association that could influence a board member's decision-making, as perceived by an independent observer.
- **Disclosure Requirements**:
  - **Shareholdings**: Report within 15 days of assuming office, with annual updates due within 15 days after the fiscal year ends.
  - **Substantial Transactions**: Disclose transactions over 5,000 shares or ₹1 lakh within 15 days of the transaction.
  - **Trading Restrictions**: Abstain from dealing in shares based on **unpublished price-sensitive information**.
  - **Outside Activities**: Avoid holding other profitable roles or engaging in activities resulting in financial gain.
  - **Acceptance of Gifts**: Reject gifts over ₹1,000 from regulated entities; such gifts must be handed over to SEBI's General Services Department.
  - **Miscellaneous**: Disclose any prior positions, significant personal or financial relationships, and honorary positions with regulated entities.
- **Procedure for Managing Conflict of Interest**:
  - **Disclosures**: Report conflicts at the earliest opportunity; seek determination from the Chairperson or Board if uncertain.
  - **Recusals**: Refrain from participating in matters with confirmed conflicts of interest.
  - **Public Disclosure**: Information under the Code remains confidential unless required for conflict management, disciplinary proceedings, or legal obligations. The public can report suspected conflicts.

Securities and Exchange Board of India Act, 1992

- **Establishment**: Created SEBI to regulate India's **securities market**, protect **investor interests**, and promote market integrity.
- **Key Roles**:
  - **Regulatory Functions**: Oversee stock exchanges, brokers, depository participants, mutual funds, and other market intermediaries.
  - **Investor Protection**: Ensure accurate disclosures, promote transparency, and prevent market abuses.
  - **Enforcement Powers**: Investigate violations, impose penalties, and initiate legal proceedings.
  - **Market Development**: Promote market expansion, innovation, and attract investments.
  - **Appeals and Adjudication**: Establish the **Securities Appellate Tribunal (SAT)** to hear appeals against SEBI's decisions.
  - **Investor Education**: Conduct awareness programs and provide guidance on prudent investment practices.

1.4 CLEAN PLANT PROGRAMME (CPP)

Context

- The Union Cabinet, under the leadership of **Prime Minister**, has approved the **Clean Plant Programme (CPP)**.

Details

- **Initiative Origin**: The CPP was proposed by the **Ministry of Agriculture and Farmers Welfare**.
- **Investment**: The programme involves an investment of **₹1,765.67 crore**.
- **Objective**: To transform the **horticulture sector** in India by improving the quality and productivity of fruit crops.
- **Announcement**: The CPP was first introduced in the **Budget Speech** by the Finance Minister in February 2023.

Core Components of the CPP

Clean Plant Centers (CPCs)

- **Establishment**: Nine **world-class Clean Plant Centers (CPCs)** will be set up across India.
- **Facilities**: These centers will have advanced **diagnostic and therapeutic facilities** and **tissue culture labs**.
- **Focus Areas**:
  - Grapes (NRC, Pune)
  - Temperate Fruits like Apple, Almond, and Walnuts (CITH, Srinagar &Mukteshwar)
  - Citrus Fruits (CCRI, Nagpur & CIAH, Bikaner)
  - Mango, Guava, Avocado (IIHR, Bengaluru)
  - Mango, Guava, Litchi (CISH, Lucknow)
  - Pomegranate (NRC, Sholapur)
  - Tropical/Sub-Tropical Fruits in Eastern India
- These centers will be vital in producing and maintaining **virus-free planting material** for large-scale propagation.

Certification and Legal Framework

- **Certification System**: A robust certification system will ensure all planting material is **accountable and traceable**.
- **Regulatory Framework**: The system will be supported by the **Seeds Act of 1966**.

Enhanced Infrastructure

- **Support**: The programme will support **large-scale nurseries** in developing infrastructure to facilitate the efficient multiplication of clean planting material.

Implementation

- **Lead Agency**: The CPP will be implemented by the **National Horticulture Board** in collaboration with the **Indian Council of Agricultural Research (ICAR)**.

- **Impact:** The CPP aims to drive transformative change in India's horticultural sector, significantly advancing the country's agricultural landscape.

Inclusive and Sustainable Approach

- **Affordability**: The CPP will ensure **affordable access** to clean plant material for all farmers, irrespective of landholding size or socioeconomic status.
- **Engagement**: Active **engagement of women farmers** in planning and implementation, providing resources, training, and decision-making opportunities.
- **Region-Specific Solutions**: The CPP will address diverse agro-climatic conditions by developing **region-specific clean plant varieties and technologies**.

Integration with Mission for Integrated Development of Horticulture (MIDH)

- **Complementary Program**: The CPP complements the **Mission for Integrated Development of Horticulture (MIDH)**, a Centrally Sponsored Scheme initiated in 2014-15 for holistic growth of the horticulture sector.
- **MIDH Focus Areas**:
  - Plantation Infrastructure Development
  - Area Expansion
  - Rejuvenation of Old Orchards
  - Protected Cultivation
  - Promotion of Organic Farming
  - Creation of Water Resources
  - Pollination Support through Beekeeping
  - Horticulture Mechanization
  - Human Resource Development
  - Post-Harvest Management (PHM) Infrastructure
  - Marketing Infrastructure

Alignment with Broader Initiatives

- **Mission LiFE:** The CPP aligns with **Mission LiFE** (Lifestyle for Environment) and the **One Health approach**.
- **Goal:** To promote sustainable practices and reduce reliance on imported planting materials, positioning India as a **global leader** in fruit production and export.

Key Benefits of the Clean Plant Programme (CPP)

For Farmers

- **Access:** Farmers will gain access to **virus-free and high-quality planting material**.
- **Outcomes**: Higher crop yields and better income opportunities.

For Nurseries

- **Support:** Streamlined certification processes and infrastructure support for efficient propagation of clean planting material.

For Consumers

- **Quality:** Superior produce free from viruses, enhancing taste, appearance, and nutritional value.

For Exports

- **Strengthening Position**: By producing higher-quality, disease-free fruits, India will enhance its position as a leading **global exporter**.

Closing Remarks

- The **Clean Plant Programme (CPP)** is set to revolutionize India's horticulture sector by improving fruit production quality and sustainability while boosting the country's export capabilities. Its inclusive approach and focus on equitable resource access underscore its commitment to broad-based growth and development in the sector.

India's Horticulture Sector

- **Production**: India is the second-largest producer of vegetables and fruits globally, leading in several key crops.
- **2022-23 Production Estimates**:
  - **Total Production**: 48 million tonnes, with an increase of 8.30 million tonnes from 2021-22.
  - **Fruit Production**: 21 million tonnes.

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- **Vegetable Production**: Increased to 212.55 million tonnes.

Various Horticulture Schemes and initiatives in India

National Horticulture Mission (NHM)

Description

- Launched in 2005, NHM promotes holistic growth of horticulture, focusing on production enhancement, nutritional security, and income support. It covers various activities such as area expansion and post-harvest management.

Enhanced Support for Horticulture Under Pradhan Mantri Fasal Bima Yojana (PMFBY)

Description

- Provides insurance premium support for horticultural crops, capped at 2% for Kharif, 5% for Rabi, and 5% for commercial crops, reflecting the importance of protecting horticultural crops.

Horticulture Cluster Development Programme (HCDP)

Description

- Aims to enhance productivity through regional specialization and market-led development, focusing on increasing exports and competitiveness of horticulture products.

Post-Harvest Infrastructure Development Scheme

Description

- Supports the establishment of modern post-harvest facilities such as pack houses and cold storage units to reduce wastage and extend shelf life.

Soil Health Card Scheme

Description

- Provides soil health cards with crop-wise recommendations, helping farmers make informed decisions about soil management and improve yields.

Horticulture Mission for North East and Himalayan States (HMNEH)

Description

- Focuses on developing horticulture in North Eastern and Himalayan regions, promoting crops suited to the unique agro-climatic conditions, and improving farmers' livelihoods.

Key Constraints and Opportunities

- **Challenges**:
  - **Net Importer**: Despite high production, India remains a net importer of fruits and vegetables.
  - **Tariff Barriers**: High tariffs limit global competitiveness.
  - **Production Issues**: Soil health, low adoption of bio-stimulants, and inadequate inputs.
  - **Post-Harvest and Processing**: Limited facilities and low R&D investment.
- **Opportunities**:
  - **Growth Potential**: Enhance domestic and global market presence.
  - **Private Sector Role**: Improve quality planting material, digitization, and infrastructure.
  - **Market Intelligence**: Develop systems for real-time data and forecasts.

By addressing these constraints and leveraging its production capacity, India can significantly enhance its role in the global horticultural trade, transforming into a leading exporter in the sector.

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1.5 CHEQUE TRUNCATION SYSTEM (CTS)

Context

- To accelerate cheque processing, the RBI has introduced a new measure for **Continuous Clearing of Cheques** using the **Cheque Truncation System (CTS)**. This change will enable cheques to be cleared within hours of submission, a significant improvement from the current two-day clearing period.

Cheque Truncation System (CTS)

- Launched by the Reserve Bank of India (RBI) in 2010, the **Cheque Truncation System (CTS)**—also referred to as the **Image-based Clearing System (ICS)**—aims to streamline cheque processing through electronic means rather than physical transport. This system captures cheque images and Magnetic Ink Character Recognition (MICR) data at the collecting bank branch, which are then sent electronically.

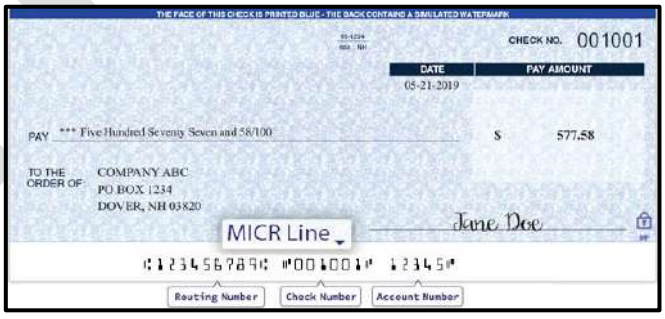
Cheque Truncation Process

- In cheque truncation, the physical movement of cheques from the drawer to the drawee branch is halted. Instead, cheques are truncated during transit, with an electronic image and relevant details like MICR fields, presentation date, and presenting banks sent to the drawee branch.
- This process eliminates the need for physical transport, cutting down processing time, transit costs, and delays.

Magnetic Ink Character Recognition (MICR)

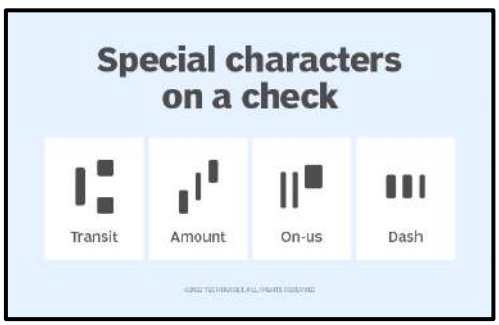
What is MICR?

- **MICR**, or **Magnetic Ink Character Recognition**, is a technology used to read characters printed with magnetic ink. It encodes information using a specific set of characters readable by machines with magnetic sensors.
- Unlike IFSC codes, MICR codes are accepted for cross-border transfers and are resistant to copying due to their unique font and magnetic ink. Each Indian bank has its own MICR code.



MICR Code Details:

- **Routing Number:** A nine-digit number identifying the bank where the cheque is drawn, issued based on the state.
- **Account Number:** A 12-digit number identifying the account associated with the cheque, consistent across all cheques from that account.
- **Check Number:** A three- or four-digit number identifying a specific cheque in a series, matching the number at the top right corner of the cheque.
- **Special Characters:** Four symbols (Transit, Amount, On-Us, and Dash) used to indicate various cheque components.



MICR Fonts and Format

- **MICR E13-B** is a standardized font used for printing MICR characters, consisting of ten digits and four special symbols. The font is designed

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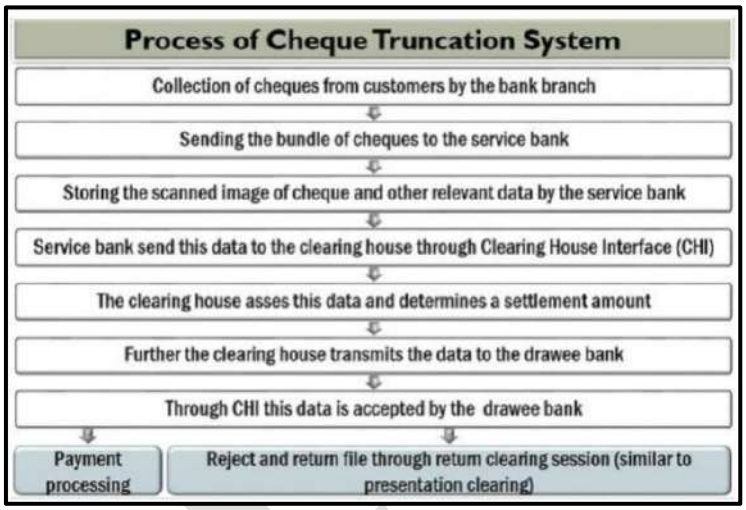
on a 7x9 matrix of squares, with specific width and height requirements for each character.

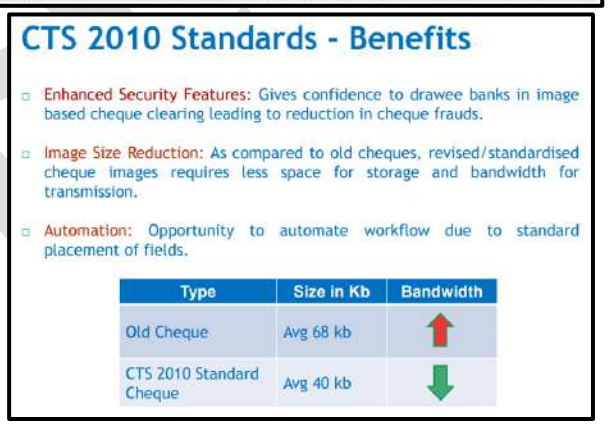
MICR Code Format

- MICR codes, located at the bottom of cheques, help verify documents and reduce processing costs. They include:
  - First three digits: City code
  - Next three digits: Bank code
  - Last three digits: Branch code



Characteristics of MICR

- **Magnetic Ink:** Allows characters to be detected by magnetic sensors.
- **Character Recognition:** Facilitates automated processing using a specific MICR font.
- **Machine Reading:** Characters are read by magnetic sensors, converting them into digital data.
- **High Accuracy and Reliability:** MICR is resistant to smudging and tampering.
- **Standardized Format:** Follows international standards for consistency.



How MICR Line Works

- The MICR line uses magnetic ink to print characters in two fonts: **E-13B** and **CMC-7**. These fonts are prepared with iron oxide for easy reading by magnetic sensors. MICR codes prevent duplication and enable accurate reading even if covered by stamps or signatures.

Features of MICR

- **Resistance to Tampering:** Recognizable even with stamps or signatures.
- **Forgery Resistance:** Difficult to trace and duplicate.
- **Error Reduction:** Minimizes processing mistakes.

History and Advantages of MICR

MICR technology, developed in the 1950s, automated check processing, enhancing efficiency and accuracy. It follows standards set by ANSI and ISO.

Advantages:

- **Efficiency:** Reduces processing time and increases accuracy.
- **Automation:** Handles large volumes of cheques reliably.
- **Security:** Enhances security through tamper resistance and standardized formatting.

Disadvantages:

- **Cost:** High implementation costs due to specialized materials and equipment.
- **Limited Flexibility:** Restricts document design options and requires specific printers.
- **Alternatives:** Digital imaging and OCR offer alternatives to MICR.

Conclusion

- MICR, while primarily used for cheque processing, also aids in document sorting, payment processing, and security printing. Its advantages and limitations depend on the application and industry.

Types of Images in CTS

The **Cheque Truncation System (CTS)** eliminates physical cheque movement by using electronic images. It involves:

- **Front Gray Scale:** Minimum resolution of 100 dpi, JFIF format, JPEG compression.
- **Front Black and White:** Minimum resolution of 200 dpi, TIFF format, CCIT Group 4 compression.
- **Back Black and White:** Minimum resolution of 200 dpi, TIFF format, CCIT Group 4 compression.

Additionally, MICR data including cheque number, MICR code, short account number, and transaction code is captured. The system relies on these images for clearing, with physical cheques retained by the presenting bank.

Benefits of CTS

- **Customer Service:** Improved service as cheques received up to the clearing cut-off time can still be processed.
- **Operational Aspects:** Eliminates the need for MICR amount encoding and reconciliation discrepancies.
- **Risk Minimization:** Reduces risks of cheque loss, tampering, and manipulation.
- **Commercial Aspects:** Cuts costs related to paper transport and enhances liquidity management.

CTS 2010 Standards

- The RBI has tasked the National Payments Corporation of India and the Indian Banks' Association with implementing the **CTS 2010 Cheque Standards**. These standards include mandatory and optional features:
  - **Mandatory Features:** CTS India Watermark, Void Pantograph, UV Ink Bank Logo, standardized field placements, specific cheque colors, micro lettering, new rupee symbol, and printer name.

New Developments

- The RBI is rolling out measures for **Continuous Clearing of Cheques** under the CTS.
- This change will enable cheques to be cleared within hours rather than the current two-day cycle, moving from batch processing to continuous clearing with real-time settlement. This shift aims to enhance efficiency, reduce settlement risk, and improve customer experience, with detailed guidelines to follow soon.

1.6 SHORT ARTICLES

Debate on E-commerce in India

Context:

- E-commerce is rapidly growing in India, but the government views it as a **"cause for concern."**

Concerns:

- The rise of **e-commerce** in consumer electronics and apparel is causing **small stores** to lose customers.
- The **quick commerce** sector, which delivers goods within 10 minutes, is also drawing customers away from **Kirana stores**, posing a threat to traditional retail.
- **E-commerce** accounted for only **7.8% of retail sales** in 2022, yet **foreign giants like Amazon** are dominating the market through **predatory pricing** and heavy investments, violating **FDI policies**.
- This has delayed **e-commerce regulations**, disrupted**small-scale retailers** and distorted the market.

Debate:

- **Small retailers** support government regulation, while **industry bodies** argue **e-commerce benefits SMEs** by expanding their reach.
- However, **CAIT** claims **foreign firms** are capturing the market through **unfair competition**.

Silver Lining:

- Despite concerns, a report shows that **customer additions** in **online commerce** have slowed post-COVID.
- The entire **retail sector** is expected to grow in the next decade, offering opportunities for both **online and offline players**.

Evaluation:

- **E-commerce** has expanded **customer reach** for **small businesses** and increased **consumer choices**, generating employment.
- While it reduces costs through technology, **traditional retailers** still have a chance to survive, as seen with **Kirana stores**. A **balanced and informed policy** is essential.

Way Ahead:

- A **detailed analysis** is needed to assess the impact of **e-commerce** on **India's interests**.
- **Foreign investments** should be evaluated for their contribution to the **local economy**.
- A **balanced regulatory framework** is urgently required.

'Bhavishya'

Context

- The **Department of Pension and Pensioners' Welfare (DOPPW)** introduced **'Bhavishya'**.

Details

- **'Bhavishya' is a centralized pension processing software** designed to address delays and clerical errors in pension processing.
- It aims to reduce **financial loss** and **harassment** for pensioners by streamlining pension processing across all central government **Ministries** and **Departments**.
- Since its mandatory implementation on January 1, 2017, **Bhavishya** has been adopted by 99 Ministries/Departments, 1,020 Offices, and 8,320 **Drawing and Disbursing Officers (DDOs)**, issuing 250,845 **Pension Payment Orders (PPOs)**.
- The system ranks 3rd in the **National e-Governance Service Delivery Assessment (NeSDA) 2021** for its **effectiveness** and **efficiency**.
- Key features include **auto registration of retirees**, **self-registration** by stakeholders, **self-filling of pension forms**, adherence to **strict timelines**, **transparency**, **automatic calculation of retirement benefits**, **real-time updates**, **e-PPO integration**, **end-to-end digitization**, **Digilocker integration**, issuance of **pensioners' identity cards**, and **bank integration**.
- The impact is significant, with 83% of **Superannuation PPOs** issued either before retirement or within 30 days, greatly improving **efficiency** and reducing **processing times**.

Green Tug Transition Program (GTTP)

Context

- The **Union Minister of Port Shipping and Waterways** officially launched the **Standard Operating Procedure (SOP)** for the **Green Tug Transition Program (GTTP)** in New Delhi.

Details

- This landmark initiative aims to transition from conventional fuel-based **harbour tugs** to greener, more sustainable alternatives, marking a significant step in India's commitment to **environmental sustainability** and the advancement of its maritime sector.
- The GTTP, a key initiative under the **'Panch Karma Sankalp'**, was announced on May 22, 2023, and seeks to **decarbonize maritime operations** in India by phasing out conventional fuel-based tugs and replacing them with **green tugs** powered by cleaner fuels.

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- Phase 1 of the GTTP, commencing on October 1, 2024, and running until December 31, 2027, will see four Major Ports—**Jawaharlal Nehru Port Authority**, **Deendayal Port Authority**, **Paradip Port Authority**, and **O. Chidambaranar Port Authority**—procure or charter at least two green tugs each.
- These tugs will follow standardized designs and require an investment of approximately **INR 1000 Crores**.
- Initially, the tugs will be **battery-electric**, with future provisions for technologies like **hybrid**, **methanol**, and **green hydrogen**.
- The GTTP aligns with India's vision of a **sustainable and green maritime sector** and is expected to significantly boost the **domestic tug industry** by creating employment opportunities in **shipbuilding** and **ship design**.
- By 2040, all tugs in Indian Major Ports are expected to transition to green tugs, with new tugs complying with **ASTDS-GTTP standards** after 2033. This initiative supports the **Maritime India Vision 2030 (MIV 2030)**, which aims to enhance India's maritime sector and make it a global leader in **safety**, **sustainability**, and **environmental responsibility**.

Maritime Amrit Kaal Vision 2047

- The **Maritime Amrit Kaal Vision 2047** aims for a 30% reduction in **greenhouse gas emissions** from port vessels by 2030, making harbour tugs ideal candidates for **green technologies**.
- The GTTP exemplifies the Government's broader commitment to **sustainability** and **innovation**, paving the way for a cleaner, greener future for India's ports and maritime operations.

Diamond Imprest Licence

Context

- During the 40th edition of the **India International Jewellery Show (IIJS) 2024**, the **Union Minister of Commerce & Industry** announced the introduction of the **Diamond Imprest Licence**.

Diamond Imprest Licence

- The **Diamond Imprest Licence** aims to support **MSME exporters** by allowing those with a specified export turnover threshold to import at least **5%** (previously **10%**) of their average export turnover from the last three years.
- This initiative **seeks to create a level playing field for MSME diamond exporters and prevent investment flight to diamond mining destinations.**

Other steps being taken

- Recent reductions in duty rates for **Gold**, **Silver**, and **Platinum** had negatively impacted the industry, but the anticipated shift to official channels is expected to boost job orders and counter export losses from the global recession.
- The Indian Government is engaging with **G7** and **EU Ministers** on transparency and data protection issues and is negotiating from a position of strength for the first time.
- Efforts include establishing a diamond centre in Mumbai or Surat and improving **diamond segregation** and **traceability** in collaboration with the **De Beers Kimberley Process**.

Annapurti Grain ATM

Context

- Odisha's **Minister for Food Supplies and Consumer Welfare** inaugurated the **Annapurti Grain ATM** at Mancheswar in **Bhubaneswar.**

Details

- The event unveiled plans to **introduce Annapurti Grain ATMs** across all districts in Odisha, simplifying the process for beneficiaries to access their entitled food grains and eliminating delays associated with the **Public Distribution System (PDS)**.
- Beneficiaries can now obtain their food grains by simply inputting their **Aadhar** or **Ration card number** and undergoing **biometric**

authentication, ensuring access to their full ration without complications.

- Launched in collaboration with the **World Food Programme**, this initiative aims to achieve **nutritional security** in Odisha by providing a reliable source of rice or wheat 24/7.
- Key features of the Annapurti Grain ATM include its **high dispensing capacity** of up to 50 kilograms in just five minutes, a **low error rate** of 0.01 percent, **energy efficiency** with a consumption of only 0.6 watts per hour (suitable for solar panels), and **24x7 access**, reducing waiting times by 70 percent. This innovative approach represents a significant step forward in ensuring that food grains efficiently and effectively reach those in need.

Overnight Index Swap (OIS)

Context

- The **Reserve Bank of India (RBI)** is currently evaluating the **investment limit** for foreign investors in the **Overnight Index Swap (OIS)** market.

Details

- An **Overnight Index Swap** is a financial contract designed to manage **interest rate risk** by exchanging predetermined cash flows over a specified period.
- Unlike conventional fixed-rate swaps, OIS involves an **overnight rate index** such as the **federal funds rate** or **London Interbank Offered Rate (LIBOR)**.
- These swaps are crucial for managing exposure to short-term interest rates and are particularly relevant for **pension funds**, **hedge funds**, and other financial institutions.
- In a simplified example, if **Company A** and **Company B** enter into an OIS with a notional value of $10 million, Company A might pay a **fixed rate** of 3%, while Company B pays the floating rate based on the overnight index.
- Payments are netted out, exchanging only the difference. OIS contracts involve agreeing on terms like **notional amount**, **fixed rate**, **floating rate index**, and **payment frequency**, **typically settling daily**.

Benefits	Description
Hedging interest rate risk	Lock in a fixed rate while receiving the floating rate.
Cost efficiency	Generally cost-effective due to the shorter tenor and no upfront premium payments.
Liquidity	Highly liquid market, facilitating easy entry and exit.
Reduced counter-party risk	Cleared through central counter-parties (CCPs).

Risks	Description
Interest rate risk	Changes in the overnight index can impact floating rate payments.
Counter-party risk	Potential for default by clearing members or CCPs.
Market volatility	Can affect liquidity and pricing.
Regulatory and legal risks	Subject to regulatory oversight which can impact market dynamics.

- Currently, foreign investors have utilized 96% of the Rs 3.5 billion limit for OIS transactions, indicating strong interest in the market.
- The inclusion of **Indian bonds** in JPMorgan's emerging market debt index has further spurred activity in the OIS market, highlighting its significance.

E-Rupee

Context

- Leading fintech companies, including Google Pay, PhonePe, Amazon Pay, Cred, and Mobikwik, are exploring the integration of the Indian central bank's digital currency, the e-rupee, into their platforms.
- By incorporating e-rupee transactions via the Unified Payments Interface (UPI), these companies aim to enhance their services beyond traditional bank-linked payment transactions.

What is E-Rupee?

- The e-rupee, or digital rupee, is a digital currency issued by the Reserve Bank of India (RBI).
- It operates entirely electronically within a computer network. As a legal tender, it functions similarly to physical banknotes but is used exclusively for online transactions.

Differences Between E-Rupee and Banknotes

Comparison with Deposits

- The e-rupee is legal tender issued by the central bank but does not accrue interest like traditional bank deposits.
- Users can convert bank deposits into e-rupees and vice versa for convenience.

Launch and Purpose of the Digital Rupee

- Launched in December 2022 on a pilot basis.
- Initially available through selected public and private banks in major cities.
- Supports both person-to-person and person-to-merchant transactions.
- Aims to offer an alternative to cryptocurrencies, enhancing transaction transparency and reducing costs associated with traditional fiat currency.

E-Rupee's Performance

- Following its launch, e-**rupee adoption peaked at over 1 million transactions per day. Current daily transactions range between 100,000 and 200,000.**

Why Fintech Companies Are Joining the E-Rupee Project

Strategic Motivation

- Google Pay, PhonePe, Amazon Pay, MobiKwik, and Cred manage over 85% of digital UPI payments in India. Their involvement could significantly boost the e-rupee's adoption.
- The RBI aims to leverage these platforms to encourage wider use of the digital rupee.
- Despite these efforts, the digital rupee will remain in the pilot phase for several years.

Conclusion

- The collaboration between major fintech companies and the RBI's e-rupee project marks a pivotal step in expanding the digital currency's use and acceptance. As the e-rupee continues its pilot phase, its integration into popular platforms could significantly influence the future of digital transactions in India.

MUST READ ARTICLE ON e-RUPEE: Digital Rupee Overview

MUST READ ARTICLE ON e-RUPEE: IAS Gazette Magazine - e-RUPI

Central Electricity Regulatory Commission (CERC)

Context

- The Central Electricity Regulatory Commission (CERC) was recently in the news.

All about Central Electricity Regulatory Commission (CERC)

Overview

- The **CERC** is a key regulator of the **power sector** in India, functioning with **quasi-judicial status** under **Section 76** of the **Electricity Act, 2003**.

Constitution

- Constituted on **24 July 1998** under the **Ministry of Power's Electricity Regulatory Commissions Act**.

Primary Objectives

- Rationalization of electricity tariffs
- Establishing transparent policies regarding subsidies

- Promoting efficient and environmentally benign policies
- Regulating tariffs for power generating companies

Legislative Background

- The **Electricity Regulatory Commissions Act, 1998** also provided for the establishment of **State Electricity Regulation Commissions (SERCs)** to set tariffs at the state level.

Composition

- Chairperson
- Three other Members
- Chairperson of the Central Electricity Authority (ex-officio Member)

Tariff Setting Mechanism

- Formulates an efficient **tariff-setting mechanism** for speedy and time-bound disposal of tariff petitions, promoting **competition, economy,** and **efficiency** in pricing bulk power.

Regulation of Tariffs

- **Tariffs of central generating stations**
- **Tariffs for electricity generated and sold across states**
- **Interstate transmission tariffs** and facilitation of **open access** in interstate transmission

Licensing and Adjudication

- **Issuing licenses** to **transmission licensees** and **electricity traders** for interstate operations
- **Adjudicating disputes** involving **generating companies** or **transmission licensees**

Operational and Management Improvement

- Works to improve **regional transmission systems** through the **Indian Electricity Grid Code (IEGC)** and **Availability Based Tariff (ABT)**.

Quality and Reliability Standards

- Specifies and enforces standards for **quality, continuity**, and **reliability** of service by licensees.

Market Development

- Promotes development of the **power market** and may **fix the trading margin** in interstate trading of electricity if deemed necessary.

Dispute Adjudication

- Adjudicates disputes to promote **competition, efficiency**, and **economy** in the electricity industry and encourages **investment** in the sector.

Advisory Functions

- Advises on the formulation of National Electricity Policy and Tariff Policy
- Promotes competition, efficiency, and investment in the electricity industry
- Addresses other matters referred by the Central Government

QCI Surajya Recognition & Ranking Framework

Context

- The **Quality Council of India (QCI)** is introducing the **QCI Surajya Recognition & Ranking Framework**.

Details

QCI Surajya Recognition & Ranking Framework is aimed at elevating state performance to enhance citizens' quality of life and contribute to a **Viksit Bharat**. This framework revolves around four core pillars:

- **Shiksha** (Education)
- **Swasthya** (Health)
- **Samriddhi** (Prosperity)
- **Sushasan** (Governance)

The framework honors states and organizations excelling in these areas.

Pillars of the Framework

- **Shiksha (Education)**: Focuses on improving education quality through rigorous accreditation and certification to ensure high standards in educational institutions.
- **Swasthya (Health)**: Emphasizes high-quality healthcare services nationwide, aiming for top standards in medical care for all citizens.
- **Samriddhi (Prosperity)**: Drives economic growth by ensuring quality in manufacturing and industrial practices, boosting economic prosperity through quality-driven methods.
- **Sushasan (Governance)**: Promotes transparent, accountable, and effective

governance, maintaining high standards in administration.

Significance

- States are crucial to national strength, and their synergy drives the creation of a **Viksit Bharat**.
- The **Surajya initiative** promotes high standards and best practices, celebrating commitment to quality and improvement.

Conclusion

- The **QCI Surajya Recognition & Ranking Framework** sets a new benchmark for excellence, with rankings providing a thorough evaluation through monthly and cumulative figures.

Carry Trade

Context

- On August 5, major **stock markets** worldwide faced their sharpest decline in decades, driven by a mix of factors such as fears of a potential **economic recession** in the US and rising **geopolitical tensions** in West Asia. A significant global trigger was the **unwinding of the yen carry trade**.

Carry Trade

- This trade involves **borrowing money** in countries with **low interest rates** and investing it in countries with **higher interest rates**.
- A prominent example is **Japan**, where the **Bank of Japan** maintained **ultra-low interest rates** of zero percent from 2011 to 2016 and even below zero (-0.10%) since 2016.
- This policy led investors to borrow yen cheaply and invest in higher-yielding assets in countries like **Brazil**, **Mexico**, **India**, and the **US**.
- However, from mid-March to late July this year, the Bank of Japan increased its interest rates by **35 basis points**, marking a significant policy shift.
- This rate hike led to the **unwinding** of the yen carry trade, causing a sell-off of investments funded through yen borrowing.
- The strengthening of the yen against other currencies, including the **dollar**, **Brazilian real**, **Mexican peso**, and **Indian rupee**, led investors to re-evaluate their holdings and liquidate international assets, contributing to the sharp global stock market decline.

Unified Pension Scheme (UPS)

Context

- The Union Cabinet has approved the Unified Pension Scheme (UPS).

Details

About

- Merges features from the Old Pension Scheme (OPS) and the National Pension System (NPS).

Provision

- NPS-covered employees can continue with NPS or switch to UPS.

Implementation

- Effective from April 1, 2025.

Eligibility

- Central government employees retiring on or before March 31, 2025, are eligible.

Note

- Employees joining after April 1, 2004, are under NPS and can

	OPS	NPS	UPS
	OPS	NPS	UPS
Pension	50% + DA	The pension amount is not fixed since it is paid based on the return on investments made in market-linked instruments managed by professional fund managers.	50% + DA
Contribution of Employee for Pension	No	Yes (10% of Basic + DA)	Yes (10% of Basic + DA)
Gratuity	Yes	Yes	Yes
Withdrawal of Commuted Corpus	Whole amount of GPF	Employees can withdraw 60% of the corpus upon retirement, which is tax-free and 40% invested in annuities for getting a pension	Not mentioned
GPF	Yes	No	No
Inflation Indexation	Pension increases with the revision of DA twice a year.	No	Pension increases with the revision of DA twice a year.
Contributed Money	Can withdraw once in year	No	No
Lump Sum Payment	No	No	1/10th of monthly emoluments (basic + DA) as on the date of superannuation for every completed 6 months service
VRS	Eligible for pension on the Date of VRS	Employee will get only 20% of Commuted Corpus and rest 80% will be invested in annuities for getting a pension	May eligible for pension only after as on date of actual retirement
Minimum Pension	9000/- + DA	No	10000 /- + DA after superannuation minimum 10 years of service (it is not mentioned about the minimum pension in case of Death before 10 months)
Family pension in case of Death during service	60 % of Basic or 50% of family pension	OPS to family till date of 60 years' service of deceased employee i.e. 50 % of basic After this, 30% of family pension	30% of family pension

choose between NPS and UPS.

Assured Pension

- 50% of average basic pay for 25+ years of service; proportionate for shorter periods, minimum 10 years.

Family Pension

- 60% of the employee's pension amount provided to the family upon the employee's death.

Minimum Pension

- Rs 10,000 per month for those with at least 10 years of service.

Inflation Indexation

- Pensions adjusted for inflation.

Dearness Relief

- Based on the All-India Consumer Price Index for Ind ustrial Workers (AICPI-IW).

Lump Sum Payment

- 1/10th of monthly emoluments for every six months of service, additional to gratuity, not affecting the assured pension.

Employee Contribution

- 10% of pay.

Government Contribution

- 18.5%.

1.7 SNIPPETS

Topics	Details
Purandar Figs	• The Agricultural and Processed Food Products Export Development Authority (APEDA) has facilitated the export of India's first ready-to-drink fig juice to Europe. • The Purandar Figs, sourced from Pune, Maharashtra, are celebrated for their sweet taste, size, and nutritional benefits. • These figs are GI-tagged, reflecting their unique qualities. Known for their distinct taste, high pulp content, and rich vitamin and mineral profile, Purandar figs stand out due to their excellent sweetness and attractive violet color. • These attributes are enhanced by the region's favourable climatic conditions, red-black soil, and salt-free well irrigation techniques. • APEDA's ongoing support has been crucial in this success, underscoring India's growing presence in the international agro-products market.
Largest floating solar project	• The largest floating solar project in central and north India, generating 90 MW of energy, has been successfully commissioned at Omkareshwar in Madhya Pradesh. • The Omkareshwar Floating Solar Project represents a Rs 646 crore investment and is the largest solar park in India as well as the most significant floating solar project in the region. • Developed under the Union Ministry of Renewable Energy, this project is poised to reduce carbon emissions by 3 lakh tonnes, advancing the central government's goal of achieving net zero carbon emissions by 2070. • It will also contribute to water conservation by minimizing water evaporation. Operated on a Build Own and Operate basis for 25 years at a rate of Rs 3.26 per unit, the project was developed through competitive tariff bidding and is established on the backwaters of the Omkareshwar dam.
Basic	• The Finance Ministry has reversed the proposed customs duty hike on imported laboratory

Customs Duty (BCD) Rate on Imported Laboratory Chemicals	chemicals following protests from scientists. • Laboratory chemicals,reagents, enzymes, and hazardous substances essential for scientific research and medical diagnostics, saw a dramatic increase in Basic Customs Duty (BCD) from 10% to 150%. • The issue was flagged by scientists, prompting intervention from the Ministry of Finance and Commerce Ministry. • The Finance Ministry has restored the original Basic Customs Duty (BCD) rate on imported laboratory chemicals, which is 10%.
Bonus Shares	• In its 47th annual general meeting (AGM), Reliance Industries announced a 1:1 bonus issue, where shareholders will receive one new share for each share they currently hold. • Bonus shares are additional shares given for free to reward shareholders and utilize reserves. • For example, a 1:1 bonus issue means if a shareholder owns 100 shares, they will receive an additional 100 shares, totaling 200 shares. • Bonus shares are not taxed when received, but any profit made upon sale is subject to capital gains tax. • Companies issue bonus shares to make their stock more affordable, reward loyal investors, and signal confidence in future growth. While the number of shares increases, the market capitalization remains unchanged as the share price typically adjusts downward to reflect the higher number of shares.

1.8 ADDITIONAL TOPICS FOR READING FROM IASGYAN WEBSITE

Topics	Date
RBI Draft Circular on Alternative Factor Authentication	2nd August, 2024
Liquidity Coverage Ratio	1st August, 2024
Futures and Options Trading	1st August, 2024
UPI Block Mechanism	31st August, 2024
Indian Railways' Path to Net Zero Carbon Emissions by 2030	30th August, 2024
Gender Budget Statement and Gender Budget of 2024-25	30th August, 2024
Agri Infrastructure Fund	4th August, 2023
Unified Lending Interface (ULI)	29th August, 2024
Internship Scheme	24th August, 2024
Nutrition Investments In Agri-Food Sector	8th August, 2024
Reducing The Poor's Health Burden	13th August, 2024

4. DEFENSE & SECURITY

4.1 LEFT WING EXTREMISM

Context

- The Union Home Minister has said, India will become free of LWE by March 2026.

Details

What is Left-Wing Extremism (LWE)?

- The Left Wing Extremism in India refers to an **extremist socio-political movement that is mainly driven by the Maoist ideologies.**
- The movement involves the overthrow of the government through armed struggle and the establishment of a communist state.
- The Maoists, popularly known as Naxalites, generally target the rural and forested regions, where they mobilize the marginalized communities such as the tribals against the state institutions.
- It has its **roots in the 1967 Naxalbari uprising** in West Bengal, led by Charu Mazumdar and Kanu Sanyal. The term "Naxalite" comes from this rebellion.
- Over five decades old and continuing, the movement has resulted in around 15,000 deaths due to Naxal-related violence.

Present Status

- LWE's influence has significantly reduced in recent years, with the "Red Corridor" (areas of LWE influence) shrinking.
- There was a **53 per cent reduction in LWE-related incidents.**
- **70 per cent reduction in the number of security personnel and civilians martyred**.
- A decrease in the number of affected districts by LWE from 126 in 2013 to 38 in the year 2024.
- The year 2022 recorded the lowest number of violent incidents and deaths in Naxal-affected areas in the past four decades.
- The number of districts affected by LWE has dropped from 90 to 45, marking a substantial shrinkage in the influence of Naxalite groups across India.
- States like Bihar, Jharkhand, Odisha, Andhra Pradesh, and Madhya Pradesh are reportedly free from Naxalism.
- Maharashtra has also gone on to make significant progress, with only 1 district remaining to be affected, that is Gadchiroli.
- in 2021, Chhattisgarh accounted for 90% of security personnel deaths. Despite a decline in overall incidents, occasional large-scale attacks, such as the 2021 Sukma-Bijapur border attack, highlight the continuing danger.

Causes of Left-Wing Extremism (LWE) in India

Socioeconomic Factors

- **Poverty and Economic Disparity:** LWE-affected regions often have high poverty rates, with limitations in basic services such as health, education, and employment.
- **Land and Forest Rights Issues:** Development projects, like mining, that alienate tribal populations from their lands are a cause for great discontent. The Forest Rights Act has also been implemented poorly.
- **Lack of Development:** Most of the LWE-affected areas have a lack of infrastructure: roads, electricity, and schools are absent in many places. This has created in the local populace a feeling of being alienated.

Political Factors

- **Poor Governance and Corruption:** poor governance coupled with corruption leads to mismanagement of resources for development in LWE-affected areas.
- **Political Alienation:** Political alienation caused by the inability of the political systems to

assimilate properly tribal and marginalised communities into the democratic process.

- **State Repression:** In some instances, the heavy-handed approach of security forces has exacerbated the situation.

Other Factors

- **Historical Grievances:** Decades of exploitation and marginalization of tribals and lower-caste communities at the hands of colonial and then post-colonial governments have created deep-seated grievances.
- **Ideological Appeal:** The promise of a "New Democratic Revolution" attracts individuals disillusioned with the status quo.
- **External Support:** The LWE groups have quite apparently received support from other insurgent organizations, both within India and abroad, that has helped them sustain their activities.

Steps Undertaken

Category	Measures/Steps Undertaken
Holistic Approach	• **National Policy and Action Plan (2015)**: MHA's multi-pronged approach for security, development, rights, governance, and public perception management. • **Review and Monitoring**: Includes intelligence sharing through Multi-Agency Centre (MAC) and SMAC, and regular inter-state coordination meetings.
Security Measures	• **Deployment of CAPFs**: CAPF battalions and Naga Battalions assist State Police in LWE areas. • **India Reserve (IR)/Specialized IR Battalions**: 45 IR battalions sanctioned for LWE-affected states. • **Security Related Expenditure (SRE) Scheme**: Funds for operational needs, rehabilitation, and community policing.
Improvised Explosive Devices (IEDs) Handling	• **SOP on Explosives/IEDs**: SOP circulated to stakeholders for compliance in Naxal-affected areas.
Air Support	• **Enhanced Air Support**: UAVs and helicopters provided to State Governments and CAPFs for anti-Naxal operations and evacuation.
Capacity Building	• **Modernization**: Funds provided under Modernization of Police Force (MPF) and Special Infrastructure Scheme (SIS) for training and equipment of State Police.
Developmental Initiatives	• **Road Requirement Plan-I**: 17,600 km of roads sanctioned. • **Telecom Connectivity**: Mobile towers installed in LWE-affected districts. • **Financial Inclusion**: Post Offices, Bank Branches, ATMs, and Banking Correspondents established. • **Education**: Eklavya Model Residential Schools (EMRS) opened.
Special Schemes	• **Special Central Assistance (SCA) Scheme**: Over 10,000 projects undertaken in the most affected districts, with 80% completed. • **Integrated Action Plan (IAP)/Additional Central Assistance (ACA)**: Public infrastructure and services in 60 tribal and backward districts.
Rights and Entitlements	• **Implementation of FRA (2006)**: Recognizes forest rights of Scheduled Tribes and other traditional forest dwellers.
Surrender and Rehabilitation	• **Rehabilitation Policy**: Districts covered under SRE Scheme, with focused resource deployment in 'Most Affected Districts' and 'Districts of Concern' to restrict LWE expansion.
Special Forces	• **Greyhounds**: Elite anti-Naxal force established in 1989.

and Operations	• **Operation Green Hunt**: Massive security force deployment started in 2009-10.
Special Initiatives and Programs	• **Aspirational Districts Programme (2018)**: Targets rapid transformation of underdeveloped districts. • **SAMADHAN Doctrine**: Comprehensive strategy with steps like Smart Leadership, Aggressive Strategy, and Harnessing Technology. • **ROSHNI Initiative**: Training and placement for rural poor youth.
Intelligence and Specialized Forces	• **Intelligence Sharing**: Multi-agency intelligence sharing mechanisms in place. • **Special Battalions**: Separate 66 Indian Reserved Battalion (IRBs) and specialized CRPF battalions like COBRA and Bastariya battalion raised to counter LWE.

Way Forward

- **Improved Intelligence**: Improved technical intelligence is critical for anticipating and preventing LWE attacks.
- **Focus on Development**: There needs to be a continuous focus on development, more in the infrastructure and basic services sectors, to win trust of local populations.
- **Surrender and Rehabilitation**: More effective rehabilitation programs for surrendered militants have the ability to reduce the strength of LWE groups.
- **Community Engagement:** Engaging local communities in governance and development processes can help to isolate extremists and remove their influence.

4.2 TYPES OF SECURITY COVERS IN INDIA

Context

- The Indian government has strengthened the security cover for Mohan Bhagwat, the chief of the Rashtriya Swayamsevak Sangh (RSS), by adding an "Advance Security Liaison" (ASL) layer to his existing Z+ security cover.

Details

Advance Security Liaison (ASL) Protocol

- The ASL is an additional security layer that involves detailed planning and coordination among various agencies.
- It includes:
  - A **specialized security team visits locations ahead of the protectee's arrival to assess and rectify any potential vulnerabilities.**
  - The ASL protocol requires **collaboration with district administration, local police, health departments, and other agencies** to ensure comprehensive security coverage.
  - Under the ASL guidelines, **the protectee must travel in specially designed vehicles or aircraft to prevent any sabotage attempts.**
  - Anti-sabotage inspections and multi-layered security rings are also mandatory during travel.
- Currently, only a few individuals, including Home Minister Amit Shah, are under Z+ security with the ASL enhancement.

Security categories

Special Protection Group (SPG)

- The Special Protection Group (SPG) provides the highest level of security, specifically for the Prime Minister of India. It was established following the assassination of Prime Minister Indira Gandhi and is governed by the SPG Act of 1988. The SPG offers comprehensive security, including armed guards, bulletproof vehicles, jammers, and advanced communication systems. The force is equipped to operate in both domestic and international environments. In 2019, the government amended the SPG Act to limit SPG protection only to the serving Prime Minister and his/her immediate family staying with them at the official residence.

Z+ Security

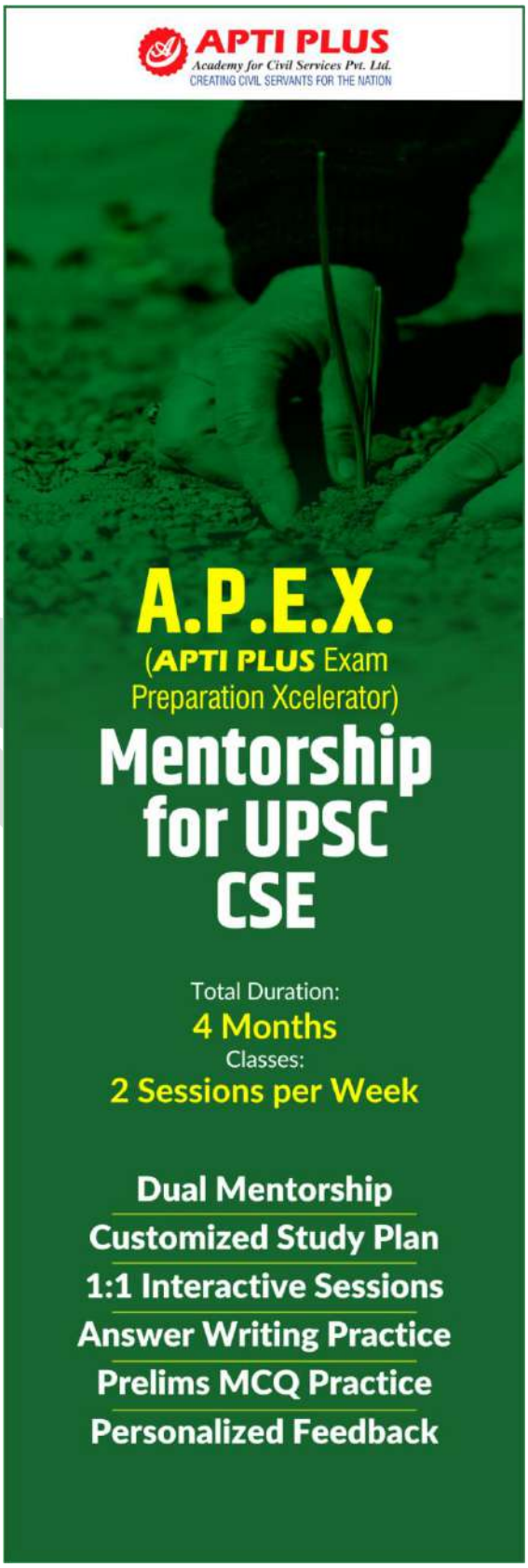
- Z+ Security is the highest level of security after the SPG, provided to individuals who face serious threats, such as top political leaders, high-profile public figures, and industrialists. The Z+ security detail includes 55 personnel, typically involving over 10 National Security Guard (NSG) commandos and police personnel. The security detail also includes bulletproof vehicles, pilot vehicles, and specialized communication equipment. Protectees under Z+ security include prominent figures such as Home Minister Amit Shah, Yogi Adityanath, and industrialist Mukesh Ambani.

Z Security

- Z Security is accorded to people who are in high danger but do not require the extensive protection extended by Z+ security. The security detail consists of 22 personnel, including 4 to 6 commandos from the NSG and police, with at least one bulletproof vehicle. The Z category also includes escort vehicles. This level of security is regularly used for high-profile politicians and celebrities who have specific threats.

Y+ Security

- Y+ Security is provided to individuals who face a moderate level of threat. The level of security accorded is relatively lower compared to Z Security. Y+ Security includes 11 personnel, including 2 to 4



commandos and police officers. The convoy may consist of 2 to 3 vehicles. The personal security officer accompanying the protectee provides close protection during public functions and travel.

Y Security

- Y Security is intended for targets who have a low to moderate level of threat perception. Generally, Y Security comprises 8 personnel, including 1 to 2 commandos and additional police personnel. Y-level security typically includes 1 to 2 vehicles and is granted to those whose work in the public domain requires at least a basic level of protection.

X Security

- X Security is designed for individuals with minor threats who still require some form of protection. It consists of 2 armed police officers without commandos. X Security typically involves minimal security, with Personal Security Officers (PSOs) assigned for general security tasks.

Other details

- The **decision to provide security cover is made by a committee comprising officials from the Intelligence Bureau, the Home Ministry, and state governments.**
- The **"Blue Book"** details security protocols for the President, Vice-President, and Prime Minister, while the **"Yellow Book"** provides guidelines for the security of other VIPs and VVIPs.
- The President of India is protected by the **President's Bodyguard, the most senior and oldest unit of the Indian Armed Forces.** The PBG serves both ceremonial and combat roles, being highly trained in paratrooping and other military skills.

4.3 SHORT ARTICLES

Exercises in News

Maritime Partnership Exercise

Context

- Indian Naval Ship (INS) Tabar and Russian Naval Ship (RNS) Soobrazitelny conducted a significant Maritime Partnership Exercise (MPX) following the participation of INS Tabar in the 328th Russian Navy Day Parade in St. Petersburg, Russia.

Details

- Maritime Partnership Exercise is a series of multilateral naval exercises conducted by the Indian Navy in collaboration with the naval forces of various foreign countries.
- These exercises are part of India's ongoing efforts to enhance operational capabilities, strengthen partnerships with friendly nations, and promote regional stability and security.

Exercise Udara Shakti 2024

Context

- Exercise Udara Shakti 2024 is a significant bilateral air force exercise between the Indian Air Force (IAF) and the Royal Malaysian Air Force (RMAF).
- Held from August 5-9, 2024, at the RMAF base in Kuantan, Malaysia, the exercise aimed to enhance military cooperation and strengthen the strategic partnership between India and Malaysia.

Details

- The first bilateral Air Force exercise that staged frontline Sukhoi-30 combat aircraft was conducted in 2018.
- **Participants and Aircraft**: Both air forces deployed their Sukhoi Su-30 fighter jets for the exercise. The IAF participated with its Su-30MKI aircraft, while the RMAF fielded its Su-30MKM aircraft.

- **Main Activities**:
  - **Air Combat Exercises**: The exercise involved joint aerial maneuvers to test and improve combat readiness and coordination.
  - **Subject Matter Expert Exchange (SMEE):** This aspect of the exercise focused on sharing technical knowledge and best practices related to the maintenance and operation of the Su-30 aircraft.
  - **HOP Exercise**: A unique feature of the exercise, the HOP (Hands-On Program) allowed pilots to exchange roles, with Indian pilots flying Malaysian Su-30MKM jets and vice versa.

Exercise Mitra Shakti 2024

Context

- **10th Edition (2024):** Scheduled from August 12 to 25 at Maduruoya in Sri Lanka's Southern Province.
- **Participants:** 120 soldiers from the Indian Army's Rajputana Rifles and an equal number from the Sri Lankan Army's Gajaba Regiment.

Details

- **Nature:** Annual joint military exercise
- **Inception:** 2012
- **Purpose:** Primarily focused on counter-insurgency and counter-terrorism operations in semi-urban environments.
- The focus of this year's exercise is on joint operations in semi-urban environments, aligning with Chapter VII of the United Nations Charter, which deals with actions regarding threats to peace and security.
- The previous edition of "Mitra Shakti" took place in Pune, India, at the Aundh Military Station, with troops from the Maratha Light Infantry Regiment participating.

Tarang Shakti

Context

- Indian Air Force vice chief Air Marshal said that the air exercise 'Tarang Shakti' will be the largest international air exercise ever conducted in India.

Details

- **Locations**: Tamil Nadu and Rajasthan
- **Countries Invited**: 51
- **Confirmed Participation**:
  - **With Assets**: 10 countries
  - **As Observers**: 18 countries
- **Notable Participants in Phase One**: France, Germany, Spain, United Kingdom
- **Notable Participants in Phase Two**: Australia, Bangladesh, Greece, Singapore, UAE, USA

INS Ships in News

INS TABAR

Context

- Indian Naval Ship (INS) Tabar and Russian Naval Ship (RNS) Soobrazitelny conducted a significant Maritime Partnership Exercise (MPX) following the participation of INS Tabar in the 328th Russian Navy Day Parade in St. Petersburg, Russia.

Details

- **Class & Type**: Talwar-class frigate
- **Commissioned**: 19 April 2004
- **Builder**: BaltiyskyZavod, Russia
- **Role**: Multi-role frigate designed for a range of operations including anti-submarine warfare, anti-aircraft warfare, and anti-surface warfare.
- **Speed**: 30 knots (56 km/h)
- **Range**: 4,850 nautical miles at 14 knots
- INS Tabar has been actively involved in anti-piracy operations off the coast of Somalia, successfully thwarting several pirate attacks and ensuring safe passage for commercial vessels.

INS SHALKI

Context

- The Indian Naval Submarine (INS) Shalki arrived at the port of Colombo for a two-day formal visit.

Details

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- **Class & Type:** Shishumar-class diesel-electric submarine.
- **Commissioning Date:** February 7, 1992.
- **Status:** Active service as of 2024.
- **Builders:** Mazagon Dock Limited in collaboration with German firm HDW.
- **Speed:**
  - Surfaced: 11 knots (20 km/h)
  - Submerged: 22 knots (41 km/h)
- **Range:** 8,000 nautical miles (15,000 km) at 8 knots (15 km/h)
- INS Shalki, launched in 1987 and commissioned in 1992, holds the distinction of being India's first indigenously built submarine.
- It has been actively involved in various naval exercises and missions, contributing to India's maritime security.

INS ARIGHAT

Context

- India is now all set to commission its second nuclear-powered submarine armed with nuclear missiles for strategic deterrence amid China's fast-expanding naval footprint in the Indian Ocean Region.

Details

- INS Arighat is **India's second indigenous nuclear-powered ballistic missile submarine (SSBN), following the successful commissioning of INS Arihant.**
- It is a critical component of India's strategic nuclear deterrence capability, aimed at enhancing the country's **second-strike capability** in the event of a nuclear conflict.
- Once commissioned, it will join INS Arihant as part of India's strategic forces, contributing to **the country's nuclear triad (land-based missiles, airborne nuclear weapons, and submarine-launched ballistic missiles).**
- INS Arighat was developed under the Advanced Technology Vessel (ATV) project and was constructed at the Shipbuilding Centre (SBC) in Visakhapatnam.
- **The submarine is an upgraded variant of INS Arihant, with enhanced capabilities in terms of stealth, endurance, and firepower.**
- **Displacement:** Approximately 6,000-7,000 tonnes
- **Length:** Over 110 meters
- **Propulsion:** Pressurized water reactor (PWR), which allows for virtually unlimited underwater endurance
- **Armament:**
  - Ballistic Missiles: Capable of carrying K-15 SLBMs (Submarine-Launched Ballistic Missiles) with a range of around 750 km, and potentially K-4 missiles with a range of 3,500 km.
  - Torpedoes: Equipped with torpedoes and anti-ship missiles for self-defense.

INS MUMBAI

Context

- INS Mumbai arrived in Colombo, Sri Lanka, for a three-day visit, marking its first port call in the country.
- This visit is part of broader naval diplomacy, as INS Mumbai is the eighth Indian naval ship to visit Sri Lanka this year.

Details

- INS Mumbai was **inducted into the Indian Navy on January 22, 2001**.
- It was **built at Mazagon Dock Limited in Mumbai.**
- It is the **third destroyer (guided-missile) of the Delhi-class.**
- It wasconstructed for a range of both offensive and defensive missions.
- Range is 8,000 nautical miles at 18 knots.
- INS Mumbai is heavily armed, **designed to engage a variety of threats including surface, air, and underwater targets.**

INS KARWAR

Context

- Vice Admiral Rajesh Dhankhar NM, assumed duties of the Director General Project Seabird.

APTI PLUS

Details

- Project Seabird is one of the largest and strategically most vital naval infrastructure projects that were undertaken to develop a **world-class naval base at Karwar, Karnataka on the west coast of India.**
- It was born **under the initiative taken by Admiral O.S. Dawson** in the early 1980s.
- The **project was sanctioned in 1985** and its foundation stone laid by then Prime Minister Rajiv Gandhi in 1986.
- **Stage I (Completed in 2005):** The phase included the construction of deep-sea harbor, breakwaters, dredging, township, naval hospital, dockyard uplift center, and ship lift facility. The base commissioned with a strength to support 10 ships.
- **Phase II: (In Progress, Fulfilled in two parts- Phase IIA and Phase IIB)**
  - **Phase IIA:** Berthing facilities, new covered dry dock, and extensive residential facilities are under construction.
  - **Phase IIB (Future development): INS Kadamba** is the center of Project Seabird and currently the third-largest Indian naval base, which would expand to become the largest once Phase IIB is completed. **Naval Air Station** is under construction, with a 2,700-meter runway that would support naval and commercial aviation.

Weaponry in News

Kamaz Typhoon

Context

- Indo-Tibetan Border Police (ITBP) has successfully conducted a demonstration and trial of the formidable Typhoon vehicle at its Transport Battalion in Chandigarh.

Details

- The **Kamaz Typhoon** is a family of advanced, mine-resistant, ambush-protected (MRAP) armored vehicles developed and manufactured by the Russian company Kamaz.
- These vehicles are designed for various military applications, including troop transport, reconnaissance, medical evacuation, and combat support, providing high levels of protection and mobility in hazardous environments.

Pinaka MK-III

Context

- The Defence Research and Development Organisation (DRDO) is equipping India with a formidable new weapon: the Pinaka-MK3, which is currently under development.
- This is the third iteration of India's indigenous air defence system, which is set to greatly enhance the Indian Army's ability to neutralise aerial threats and counter enemy forces positioned on remote highlands.

Feature	*Pinaka Mk-I*	*Pinaka Mk-I Enhanced*	*Pinaka Mk-II*	*Guided Pinaka*	*Pinaka Mk-III*	*Pinaka Mk-III ER*
Range	37.5 km	45 km	60-75 km	90 km	120 km	300 km
Length	4.88 m	4.72 m	5.17 m	2.91 m	-	-
Rate of Fire	44 seconds	20 seconds (40 rockets)	-	-	-	-
Accuracy	≤ 1.5% range	≤ 60 m and	≤ 1.5% range	-	-	-

		<30 m (CEP)				
Salvo Reload Time	4 minutes	Unknown	-	-	-	-
Warheads	PF, RHE	DPICM	PF, RHE	HEPF, RHE	-	-
Detonation Mechanism	Contact + Delay, Electronic time, and Proximity fuze	Contact and Proximity fuze	Contact + Delay	-	-	-
Guidance	Free flight	INS + SATNAV	Free flight	-	-	-
Flight Stabilization	4 curved fins	6 flat fins	6 flat fins	4 curved fins	-	-
Launcher	Tatra truck	Tatra truck	-	-	-	-

Gaurav Long Range Glide Bomb

Context

- Defence Research and Development Organisation (DRDO) has carried out successful maiden flight test of Long Range Glide Bomb (LRGB), GAURAV from Su-30 MK-I platform of the Indian Air Force (IAF).

Details

- **Gaurav Long-Range Glide Bomb:**
  - The Gaurav is a 1,000 kg class air-launched LRGB developed indigenously by the Defence Research and Development Organisation (DRDO).
  - It was successfully flight-tested from a Su-30 MK-I fighter jet.
  - This bomb is capable of hitting targets with pinpoint accuracy, employing a highly accurate hybrid navigation system.
- **Khagantak Series:**
  - Developed by JSR Dynamics Pvt Ltd in collaboration with Bharat Electronics Ltd (BEL), the Khagantak series represents a leap forward in India's LRGB capabilities.
  - The Khagantak 306 and 243 variants offer operational ranges of 175 km and 144 km, respectively.
  - These bombs feature advanced GPS and ADC-coupled Navigation Systems that enhance resilience against jamming, ensuring accuracy even under adverse conditions.
  - The Khagantak bombs are also equipped with Wide Field of View Electro-Optical/Infrared (EQ/IR) seekers, which enhance long-range target detection.

AIM 174B Missile

Context

- It represents a significant upgrade in the Navy's air-to-air combat capabilities, building on the body of the Standard SM-6 missile and integrating technology from the AIM-120 AMRAAM seeker.

Details

- **Development and Purpose**: The AIM-174B was unveiled in 2024, with its first flight occurring in the same year. It is intended to fill the gap left by the retirement of the AIM-54 Phoenix, providing carrier-based fighters like the F/A-18E/F Super Hornets with the ability to engage targets at extended ranges.
- **Performance**: The missile is designed to achieve a top speed of Mach 3.5 and has an estimated maximum range of 300 kilometers. This range exceeds that of the AIM-120 AMRAAM and places the AIM-174B among the most capable air-to-air missiles in the world.

- **Technology**: The AIM-174B utilizes an active radar homing seeker, derived from the AIM-120, which allows for precise targeting at long distances. It is also expected to be integrated within the Naval Integrated Fire Control-Counter Air (NIFC-CA) architecture, working in tandem with platforms like the E-2D Hawkeye, F-35 fighters, and AEGIS combat systems.

Anti-Submarine Warfare Sonobuoys

Context

- US has approved a USD 52.8 million government-to-government deal for the sale of Anti-Submarine Warfare Sonobuoys that will be integrated with the Indian Navy's Romeo helicopters.

Details

- Sonobuoys are **components of Anti-Submarine Warfare** (ASW) used to **detect, track, and engage enemy submarines.**
- These devices are deployed from aircraft or helicopters into the water, where they detect underwater sounds and transmit data back to the host platform.
- The MH-60R Seahawk is commonly known as the "Romeo"
- It is a **multi-role maritime helicopter designed by Sikorsky Aircraft (a subsidiary of Lockheed Martin).**
- It is primarily used by the United States Navy and is now inducted into the Indian Navy.

Palianytsia Missile

Context

- The **Palianytsia** was used for the first time to target a Russian military installation.

Details

- The missile is **launched from a ground-based platform.**
- It features a **turbojet engine.**
- The Palianytsia has a **700-km range (like ATACMS).**
- The missile is capable of striking approximately two dozen Russian military airfields.
- **It is significantly cheaper than similar missiles.**

SIG 716 Rifles

Context

- The Ministry of Defence has signed a repeat order for 73,000 SIG 716 rifles from Sig Sauer of the U.S. and deliveries are expected to completed by end-2025.

Details

- The Indian Army **completed the procurement of the SIG Sauer 716 G2 rifles in February 2019 as part of its modernization drive.**
- The rifles are **issued to troops on the front line and mainly deployed along LoC with Pakistan**.
- This was **part of the bigger decision to replace the INSAS rifles**, already facing problems with their reliability.
- SIG 716 rifles **outperformed other competitors, such as the Caracal CAR817 and an Israeli rifle**, in terms of their features and ability to adapt to Indian conditions.

Defence Acquisition Council Approvals

Context

- The Defence Acquisition Council (DAC) reviewed and approved amendments to various procurement deals.
- Key approvals included amendments to the deal for MQ-9B UAVs from the US, procurement of Advanced Land Navigation Systems for the Army, and 22 Interceptor Boats for the Coast Guard.

Details

MQ-9B UAV Deal Amendments

Must read: MQ-9B

- **MQ-9B UAVs**: The DAC approved amendments related to the indigenous content of the deal for 31 MQ-9B High Altitude Long Endurance (HALE) Unmanned Aerial Vehicles (UAVs) from General Atomics, USA.
  - **UAVs Distribution**: 15 Sea Guardians for the Navy and 16 Sky Guardians (eight each for the Army and Air Force).
  - **Cost**: Estimated at $3.99 billion.
  - **MRO Facility**: General Atomics to establish a Global Maintenance, Repair, and Overhaul (MRO) facility in India, contributing to offset obligations.

Defence Acquisition Council (DAC)

- The Defence Acquisition Council (DAC) is a crucial body within the Indian Ministry of Defence, responsible for approving major acquisitions and ensuring that the procurement processes for the Indian Armed Forces align with national strategic objectives and the goal of achieving self-reliance in defence production.
- Established in 2001, the DAC is chaired by the Defence Minister and includes key officials from the Ministry of Defence and the Armed Forces.
- The DAC's primary functions include: Formulating policies for acquisitions, Granting Acceptance of Necessity (AoN) for procurement proposals, Ensuring the procurement process is efficient, transparent, and cost-effective and Promoting indigenous production of defence equipment to reduce dependency on foreign vendors.

About ALNS

- The Advanced Land Navigation System (ALNS) Mk-II, recently approved for procurement by the Defence Acquisition Council (DAC), is designed to enhance the navigational capabilities of Armoured Fighting Vehicles (AFVs) of the Indian Army.
- This system will be sourced from Bharat Electronics Limited (BEL), Chennai under the Buy [Indian-Indigenously Designed Developed and Manufactured (IDDM)] category, aligning with India's push for Aatmanirbhar Bharat or self-reliant India.

Bureau of Police Research and Development (BPR&D)

Context

- Union Home Minister attended **54th foundation day** of Indian police's think tank **Bureau of Police Research and Development on August 28.**

Details

- The Bureau of Police Research and Development is an **agency in the Ministry of Home Affairs for carrying on the modernization of police forces, research in policing, and training of police personnel in India**.
- It is the brainchild of the practical steps undertaken in 1970 after the **internal security situation arose in Jammu and Kashmir, Punjab, and Bengal.**

Evolution of BPR&D

- 1966: The Police Research Advisory Council was established to meet the newly felt needs of the police.
- 1970: BPR&D came into being and replaced the Police Research Advisory Council.
- **Early Structure:** The BPR&D had initially two major divisions, namely:

- Research, Publication & Statistics Division: Related to research and publication on aspects relating to policing.
- Development Division: The division is engaged in the development and modernization of police forces.

- **Expansion and Reorganization:**
  - 1973: The **Training Division came out through recommendations of the Gore Committee, 1971** on police training, recognizing an organized and regular training of police personnel became necessary.
  - 1995: Correctional Division was established to look into issues concerning prisons and prison reforms to extend further what BPR&D mandate covers.
  - 2008: The National Police Mission was added to the bureau's portfolio, with the Development Division being reconstituted as the Modernisation Division to reflect the evolving paradigm of police modernization to meet the emerging challenges.
  - **Present Divisions**
    - ✓ Research Division
    - ✓ Modernisation Division
    - ✓ Training Division
    - ✓ Correctional Division
    - ✓ National Police Mission

Gallantry Awards 2024

Context

- On the eve of the 78th Independence Day, President DroupadiMurmu approved 103 gallantry awards for personnel of the armed forces and Central Armed Police Forces, with the honours including four Kirti Chakras and 18 Shaurya Chakras, India's second and third highest peacetime awards for uncommon courage and grit.

Details

- The awards were introduced by the Government of India on January 26, 1950.
- Initially, only military personnel were eligible, but over time, civilians and personnel from other forces (e.g., police) have also been recognized.
- Gallantry awards are typically announced twice a year, on Republic Day (January 26) and Independence Day (August 15).

Categories of Gallantry Awards

Gallantry Awards in the Face of the Enemy

These awards are the highest honors in India, awarded for acts of extraordinary bravery during wartime.

- **Param Vir Chakra (PVC)**
  - **Established:** 1950
  - **Criteria:** Awarded for the highest degree of valor or self-sacrifice in the presence of the enemy.
  - **Design:** It features a bronze medallion with four replicas of Indra's Vajra, and the State Emblem in the center.
  - **Significance:** It is the highest military decoration in India.
  - **Notable Recipients:** Major Somnath Sharma, Captain Vikram Batra, and others.
- **Maha Vir Chakra (MVC)**
  - **Established:** 1950
  - **Criteria:** Awarded for acts of conspicuous gallantry in the presence of the enemy.
  - **Design:** The MVC is a circular silver medal featuring a five-pointed star with the State Emblem at the center.
  - **Notable Recipients:** Brigadier Mohammad Usman, Lieutenant Colonel Dhan Singh Thapa, and others.
- **Vir Chakra**
  - **Established:** 1950
  - **Criteria:** Awarded for acts of gallantry in the presence of the enemy.
  - **Design:** The Vir Chakra is a circular bronze medal featuring a star, with a domed centerpiece bearing the State Emblem.

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- **Notable Recipients:** Wing Commander AbhinandanVarthaman, Flying Officer Nirmal Jit Singh Sekhon, and others.

Gallantry Awards Not in the Face of the Enemy

These awards are conferred for acts of bravery outside the battlefield or during peacetime.

- **Ashoka Chakra**
  - **Established:** 1952 (originally known as the Ashoka Chakra Class I)
  - **Criteria:** Awarded for valor, courageous action, or self-sacrifice away from the battlefield.
  - **Design:** The medal is circular with a depiction of the Ashoka Chakra, surrounded by a lotus wreath.
  - **Significance:** It is the highest peacetime military decoration in India.
  - **Notable Recipients:** Havildar Hangpan Dada, Assistant Sub-Inspector Babu Ram, and others.
- **Kirti Chakra**
  - **Established:** 1952 (originally known as the Ashoka Chakra Class II)
  - **Criteria:** Awarded for conspicuous gallantry away from the battlefield.
  - **Design:** Similar to the Ashoka Chakra, featuring a replica of the Ashoka Chakra at the center.
  - **Notable Recipients:** Major Sudhir Kumar Walia, Captain Ummed Singh Mahra, and others.
- **Shaurya Chakra**
  - **Established:** 1952 (originally known as the Ashoka Chakra Class III)
  - **Criteria:** Awarded for acts of gallantry away from the battlefield.
  - **Design:** It features a bronze medallion with a replica of the Ashoka Chakra, surrounded by a lotus wreath.
  - **Notable Recipients:** Major Sandeep Unnikrishnan, Wing Commander Anjan Kumar, and others.

BHISHM Cubes

Context

- Ukrainian President thanked Prime Minister Modi for the BHISHM cubes, a critical tool that will help expedite the treatment of the injured and save precious lives amid the war with Russia.

Details

- Project Aarogya Maitri is an initiative by the Government of India aimed at providing essential medical supplies and support to developing nations facing humanitarian crises, such as natural disasters or health emergencies.
- The BHISHM Cube is **also known as the Arogya Maitri Bhishm Cube**.
- It is an innovative initiative by the Indian Government designed to provide rapid and effective medical assistance during emergencies and disaster situations.
- These cubes were **developed under Project BHISHM (Bharat Health Initiative for SahyogHita and Maitri),** reflecting India's commitment to global health and humanitarian aid.
- The BHISHM Cube has been **successfully deployed in high-altitude areas by the Indian Air Force and Indian Army in August 2024**.

Key Features

- The BHISHM Cube is **designed for easy transportation** (including air, sea, land, and drones).
- Its **modular nature** allows it to be deployed rapidly: ideal for emergency situations where quick response is critical.
- Each cube is equipped with a **wide range of medical supplies** (portable ventilators, multi-parameter monitors, and surgical tools).
- The BHISHM Cube **can support up to 200 patients**.
- It **comes with an accompanying app** that offers medical professionals detailed information on the contents and usage of the equipment.

APTI PLUS

- Built to withstand harsh environments, the BHISHM Cube is **waterproof, corrosion-proof, and complies with all relevant regulatory standards.**

Directorate General of Quality Assurance

Context

- DRDO handed over the Authority Holding Sealed Particulars (AHSP) of Nipun to the Directorate General of Quality Assurance (DGQA).
- This transfer marks a significant milestone, indicating that the munition is now fully integrated into the Indian military's logistics and quality assurance systems.

Details

Nipun Munition

- **Nipun** is an advanced anti-personnel munition developed by the Defence Research and Development Organisation (DRDO) of India.
- It is specifically designed for soft target applications, meaning it is effective against personnel rather than vehicles or structures.
- The munition was **developed by the Armament Research & Development Establishment (ARDE) in collaboration with the High Energy Materials Research Laboratory (HEMRL),** both based in Pune, India.
- Nipun is part of India's broader efforts to modernize its military capabilities, focusing on indigenously developed solutions.

Directorate General of Quality Assurance (DGQA)

- The Directorate General of Quality Assurance (DGQA) **operates under the Department of Defence Production, Ministry of Defence, Government of India.**
- **Responsible for ensuring the quality of defense equipment, armaments, and stores used by the Indian Armed Forces.**
- Plays a key role in maintaining reliability, safety, and operational efficiency of defense products.

Historical Background

- DGQA's **origins date back to the British era with the establishment of Ordnance Factories.**
- Formalized post-independence to cater to the quality control needs of the Indian Armed Forces.
- Has evolved over time to address the growing and diverse requirements of India's defense sector.

Organizational Structure

- **Headquarters:** Located in New Delhi, overseeing all activities and policies.
- **Subordinate Offices:** Includes several technical directorates and field offices spread across the country.
- **Technical Directorates:** Focus on specific categories of equipment like armaments, vehicles, electronics, and more.
- **Field Offices**: Positioned near defense manufacturing units for on-site quality assurance activities.

Functions and Responsibilities

- **Quality Assurance**: Ensuring the quality of defense products through inspections, testing, and certification.
- **Acceptance Testing**: Conducting tests on equipment before they are inducted into service by the armed forces.
- **Vendor Development**: Assisting manufacturers in meeting defense standards and promoting indigenization of defense production.
- **Quality Audits**: Performing audits and assessments of defense production units to ensure compliance with quality standards.
- **Defect Investigation**: Investigating defects in defense equipment and recommending corrective actions.

5. ENVIRONMENT & ECOLOGY

5.1 SPECIES IN NEWS

Orangutans

Context

- Malaysia has revised its earlier proposal of gifting critically endangered orangutans to palm oil-purchasing countries.

All about Orangutans

- **Orangutans** are **great apes** native to the **rainforests** of **Indonesia and Malaysia**, now found only in **Borneo and Sumatra**.
- Classified in the genus **Pongo**, orangutans were initially considered one species but were split into two in 1996: the **Bornean orangutan** (**P. pygmaeus**) and the **Sumatran orangutan** (**P. abelii**). A third species, the **Tapanuli orangutan** (**P. tapanuliensis**), was identified in 2017.
- They are the only surviving species of the subfamily **Ponginae**, which diverged from other hominids like **gorillas, chimpanzees, and humans** millions of years ago.
- Orangutans can live over **30 years** in both the wild and captivity.
- All three species are classified as **critically endangered** according to the **IUCN Red List**. They are legally protected in **Malaysia and Indonesia** and are listed under **Appendix I by CITES**, which prohibits unlicensed trade.
- Key threats include **poaching, habitat destruction, deforestation** (for **palm oil cultivation and logging**), and the **illegal pet trade**.

Chital/ Spotted Deer

Context

- A recent paper urges the mapping of **spotted deer** (***Chital, Axis axis***) in the 5,000 square kilometers of Chennai Metropolitan Area.

All about Cheetal

- **Scientific Name**: Axis axis
- **Distribution and Habitat**:India, Nepal, Bhutan, Bangladesh, Sri Lanka.
- Introduced in Australia in the 1800s; in USA; in Croatia;
- **Behavior and Ecology**:Activity: Diurnal; peaks at dusk and early morning.
- Herd Structure: Matriarchal; small herds, up to 100 individuals.
- **Diet**:Feeding: Grazers and browsers.
- **Breeding**: Year-round with peaks geographically.
- **Gestation**: Newborns are hidden for a week.
- **Lifespan**: 5–10 years in the wild, 22 years in captivity.
- **Conservation Status**: IUCN Red List: **Least concern.**
- **Threats**: Local extinctions due to hunting and livestock competition.
- **Legal Protection**: Indian Wildlife Protection Act (1972), Bangladesh Wildlife (Preservation) (Amendment) Act (1974).
- **EU Regulation**: Added to the list of invasive alien species; import banned from 2022.

Slow Loris

Context

- Villagers in Shimlabagan have reporte a rare species of the endangered primate, the Slow Loris.

About Slow Loris

- **Genus**: *Nycticebus*
- **Species**: *Sunda slow loris* (*N. coucang*), *Bengal slow loris* (*N. bengalensis*), *Javan slow loris* (*N. javanicus*), *Philippine slow loris* (*N. menagensis*), *Bangka slow loris* (*N. bancanus*), *Bornean slow loris* (*N. borneanus*), *Kayan River slow loris* (*N. kayan*), *Sumatran slow loris* (*N. hilleri*), *Pygmy slow loris* (*X. pygmaeus*)

- **Distribution**: **South and Southeast Asia**, found in **India**, **China**, **Laos**, **Vietnam**, **Cambodia**, **Bangladesh**, **Burma**, **Thailand**, **Malaysia**, **Indonesia**
- **Habitat**: **Tropical and subtropical regions**, including **primary** and **secondary rainforests**, **bamboo groves**, **mangrove forests**, prefer high, dense canopies, also found in disturbed habitats like **cacao plantations** and **mixed-crop home gardens.**
- **Diet**: **Omnivorous**.
- **Social Structure**: Generally **solitary**, **overlapping home ranges**, males have larger ranges, communication mainly through **scent marking**, limited **vocal exchanges.**
- **Defensive Adaptations**: **Toxic secretion** from **brachial gland**, mixed with saliva for defense, secretion similar to **cat dander allergen**, vocalizations and **coloration patterns** may aid in protection
- **Reproduction**: **Polygynandrous system**, long gestations (about six months).
- **Anatomical Adaptations**: **Long narrow tongue** for reaching gum in cracks.
- **Conservation Threats**: **Deforestation** leading to habitat loss and fragmentation, **wildlife trade** threatens wild populations as **exotic pets** or for **traditional medicine.**
- **Current Conservation Status:** All species identified before 2012 listed as **"Vulnerable"** or **"Endangered"** by **IUCN Red List**, three new species not yet evaluated.
- **Legal Protection**: **CITES Appendix I**, all slow loris species protected from **commercial international trade**.

South American Lungfish

Context:

- Recent analyses revealed that the **South American lungfish** genome grew massively during the past **100 million years**.

South American Lungfish:

- The South American lungfish is an extraordinary **living fossil**, existing for over **400 million years**, making it the nearest living relative to the first **land vertebrates**, closely resembling its primordial ancestors from the **Devonian period**.
- **Habitat and Distribution**: This freshwater species, known as *Lepidosirenparadoxa*, inhabits **slow-moving** and **stagnant waters**, found across several South American countries, including **Brazil**, **Argentina**, **Peru**, **Colombia**, **Venezuela**, **French Guiana**, and **Paraguay**, where environments are typically low in oxygen, making the lungfish's ability to **breathe air** a significant advantage.
- **Genomic Marvel**: The South American lungfish boasts the **largest genome** of any animal, with its genome about **30 times larger** than the **human genome**, providing insight into the lungfish's complex **evolutionary background** and **adaptations**.

Zebrafish

Context:

- New research shows **zebrafish** can fully heal a **severed spinal cord**.

About Zebrafish:

- **Scientific Classification**: **Species**: *Danio rerio*, **Family**: Cyprinidae, **Order**: Cypriniformes
- **Native Range: South Asia**: **India**, **Pakistan**, **Bangladesh**, **Nepal**, **Bhutan**; introduced to the **USA, Colombia, Malaysia.**
- **Habitats: Freshwater habitats**: streams, canals, ditches, oxbow lakes, ponds, rice paddies; **Water conditions**: near-neutral to somewhat basic pH.
- **Appearance:** Five blue horizontal stripes on the body, fusiform shape, mouth directed upwards; **Size**: Up to **4–5 cm** in length; **Lifespan**: 2–3 years in captivity, up to 5 years in ideal conditions.
- **Regenerative Abilities**: Regenerates **heart**, **lateral line hair cells**, **photoreceptor cells**, and **retinal neurons**;

- **Research Importance**: Widely used in **developmental biology**, **gene function**, **oncology**,
- **IUCN Red List Status**: **Least Concern**

Gastrodia indica

Context:

- **Orchids** are known for their vibrant flowers symbolizing **beauty** and **elegance**.
- *Gastrodia indica*, discovered in **India**, challenges this norm as it never opens its flower.

Details

- **A Unique Orchid Species in Sikkim**: Found in **Fambonglho Wildlife Sanctuary** in **Sikkim**, *Gastrodia indica* never opens its flower, defying typical orchid expectations.

Fambonglho Wildlife Sanctuary:

- Located 30 km west of Gangtok in Sikkim, adjacent to **Khangchendzonga National Park**.
- **Highest Point:**Tinjure,**Notable birds** like the **Rufous-headed hornbill** (endangered), and mammals such as the **Red panda** and **Musk deer**.

Hoverflies

Context

- Kashmiri scientists have discovered a new hoverfly species, *Spilomyia recta*, in the Rafiabad forests. This hoverfly mimics wasps, a trait aiding in predator evasion and highlighting its ecological role in pollination and nutrient recycling.

Hoverflies

- Hoverflies, or **Syrphidae**, are globally distributed with about 6,000 species.
- They are known for **Batesian Mimicry:**their mimicry of wasps, aiding in their defense, and their role as important pollinators and biological control agents.

Clouded Leopard

Context

- International Clouded Leopard Day event held at Mizoram University, Aizawl.

International Clouded Leopard Day

- **International Clouded Leopard Day** on August 4th, initiated by Howlett's Wild Animal Park in 2018, aims to raise awareness about the clouded leopard (*Neofelisnebulosa*), **a vulnerable species.**
- This leopard, with its dusky-grey blotches and excellent climbing skills, inhabits dense forests from the **Himalayas to Southeast Asia. It is found in Nepal, Bhutan, Northeast India, Southeast Asia, and South China** but is locally extinct in Singapore and Taiwan.
- The species faces threats from deforestation and poaching, with a population under 10,000. Conservation efforts include **CITES Appendix I protection, hunting bans, and successful captive breeding programs since the 1980s.**

Fin Whales

Context

- Japan's expansion of **commercial whaling** to include **fin whales**, the second-largest animal species, has drawn criticism from Australia's government.

Fin Whale

- **Fin Whale** is the second-longest **cetacean**, upto**26 meters,** weighing **77-81 tonnes**.
- They have a **brownish-gray** body with a **paler underside**, aiding in camouflage.
- Two main **subspecies** are recognized: one in the **North Atlantic** and another in the **Southern Hemisphere**.
- Fin whales inhabit all major oceans, avoiding **polar ice packs** and some small oceanic regions, with high populations in **temperate** and **cool waters**.
- They are found from the **Gulf of Mexico** to the **Chukchi Sea** in the North Pacific and

migrate between **Antarctic feeding grounds** and lower-latitude breeding areas in the Southern Hemisphere.
- Predation is primarily from **killer whales**. As **filter feeders**, they consume up to **1,800 kg** of food daily, including small fish, squid, and krill.
- Fin whales are now listed as **vulnerable** by the **IUCN.**

Great Four-Ring Butterfly

Context

- A study reveals that the **great four-ring butterfly** has been spotted in India for the first time in **61 years**, as detailed by the **Bombay Natural History Society (BNHS)**.

Great Four-Ring Butterfly

- The **Great Four-Ring Butterfly** belongs to the **Satyrinae subfamily** within the **Nymphalidae family**, which comprises about **6,000 species**.
- India hosts **35 Ypthima species**, with **23** in the northeastern states.
- Ypthima butterflies are most diverse in **China**, particularly in **Yunnan** and **Sichuan**, with additional populations in **Nepal**, **Bhutan**, and **Myanmar**.

Schisturasonarengaensis

Context

- A new species of loach, ***Schisturasonarengaensis***, has been identified in **Meghalaya's South Garo Hills district**, near the **Bangladesh border**.

Details

- Discovered in **Sonarenga**, **Nakama**, and **Chiabol caves**, this freshwater fish is distinguished by its **13-26 vertically elongated to circular black blotches** on a grayish-black mid-lateral stripe over a pale-beige body.
- ***Schisturasonarengaensis*** is unique for its **prominent eyes** and **reduced pigmentation**, unlike other subterranean species that typically lose both eyes and pigmentation. It is genetically distinct from other known species in the region, except for **Schisturasyngkai**. The species retains its **eyes** and is not blind like other cave-dwelling loaches found in the **Jaintia** and **Khasi Hills**.
- **Loaches**, belonging to the super family ***Cobitoidea***, are **freshwater**, bottom-dwelling fish found across **Eurasia** and **northern Africa**.
- They vary greatly in size and form, from the small ***Pangio longimanus*** to the larger **Leptobotiaelongata**. Loaches are significant in the **food industry** in East and Southeast Asia and are popular in the **aquarium trade**.

Geckos

Context

- **Scientists** from India and the **United Kingdom** have described **six new species** of **bent-toed geckos** from Northeast India.

Details

Arunachal Pradesh:

1. **Namdapha Bent-Toed Gecko**: Found in the **Namdapha Tiger Reserve**, known for its lowland evergreen forests.
2. **Siang Valley Bent-Toed Gecko**: Discovered in the **Siang River valley**.
3. **Ngengpui Bent-Toed Gecko**: Located in the **Ngengpui Wildlife Sanctuary**, characterized by tropical semi-evergreen forests.

Manipur:

4. **Manipur Bent-Toed Gecko:** Discovered near **LamdanKabui village**.

Nagaland:

5. **Kiphire Bent-Toed Gecko**: Found in regenerating jhum land.
6. **Barail Hill Bent-Toed Gecko**: Discovered in a reserved forest.

Geographic Distribution and Diversity

- Bent-toed geckos are found across **Peninsular India**, **Sri Lanka**, the **Himalayan foothills**, **Northeast India**, **Southeast Asia**, and the **Solomon Islands**. With approximately **346**

species identified, they exhibit significant diversity.

Geckos

- Geckos are small, predominantly carnivorous lizards found on every continent except **Antarctica**. They are characterized by their **vocalizations**, **specialized toe pads**, and **nocturnal adaptations**.

Evolutionary History

- Gecko ancestors date back to the **Late Jurassic**, with modern gecko fossils appearing in **mid-Cretaceous Burmese amber**.
- They exhibit diverse reproductive strategies, including **egg-laying**, **live-bearing**, and **parthenogenesis**.

Sturgeon

Context

- **Poaching** and **trafficking** are impacting **four species** of **sturgeon** in Danube River.

Sturgeon

- **Family: Acipenseridae;**
- **Species:28**
- **Historical Range**: From the **Late Cretaceous**; ancestors date back **174-201 million years ago.**
- **Current Range**: **Subtropical, temperate,** and **sub-Arctic rivers**, lakes, and coastlines in **Eurasia** and **North America.**

Physical Characteristics

- **Size**: Typically,**2-3.5 meters**; largest recorded at **7.2 meters.**
- **Body**: **Elongated**, **spindle-like**, **scaleless**, armored with **bony plates** (**scutes**).
- **Tail**: **Heterocercal** (shark-like).
- **Barbels**: Four sensory organs around the mouth..
- **Lifespan**: Average **50-60 years**, mature at **15-20 years.**

Habitat

- **Distribution**: **Atlantic Coast**, **Great Lakes**, **St. Lawrence**, **Missouri**, **Mississippi Rivers**, **Black Sea**, **Caspian Sea**, **Arctic rivers**, **Central Asia**, **Amur River**, and **Danube River**
- **Environment: Anadromous** (migrates to spawn) or purely **freshwater**; prefers **nutrient-rich**, **brackish waters**

Behavior

- **Feeding: Benthic feeders**; diet includes **shellfish**, **crustaceans**, **small fish.**
- **Senses:** Uses **barbels** and **electro-receptors** for navigation and feeding.
- **Leaping:** Often leaping from water; reasons include **communication**, **prey capture**, or **predator evasion.**

Conservation Status

- **Threats**: **Overfishing**, **poaching**, **habitat destruction**, **damming.**
- **Extinction Risk**: Over **85% of species** at risk; critically endangered species include the **Chinese sturgeon** and **beluga sturgeon.**
- **Conservation Efforts:** Global and local initiatives, including **restocking programs** and **habitat monitoring**. Organizations like the **World Sturgeon Conservation Society** and **Sturgeon for Tomorrow** are active in conservation.

Northern Bald Ibis

Context

- The **Northern Bald Ibis** (***Geronticuseremita***) was once common across **Europe, the Middle East, and northern Africa** but went extinct in the wild by the 17th century. Now, it survives mainly in **southern Morocco and Syria. Conservation efforts, have been instrumental in reintroducing the species to central Europe.**

Details

- The ***Northern Bald Ibis*** inhabits open areas such as **grasslands, rocky mountains, and semi-deserts**, often near running water. Its fossil record dates back 1.8 million years.
- In 2018, due to successful conservation programs in regions like Turkey, Austria, and Italy, its status on the **IUCN Red List** was

improved from **Critically Endangered** to **Endangered**.
- However, the species remains threatened by **pesticide poisoning** and **habitat loss**, requiring ongoing protection.

Mimetus species

Context

- The **Zoological Survey of India (ZSI)** has discovered two new spider species in the **southern Western Ghats**, a biodiversity hotspot.

Mimetusspinatus and Mimetusparvulus

- **Mimetusspinatus**, found in **Mookambika Wildlife Sanctuary, Karnataka**, is a medium-sized spider with a pale-yellow head, dull grey-white abdomen, and long black spine-like hairs.
- This discovery ***Mimetusparvulus*** is significant as it marks the first report of the genus **Mimetus** in India after 118 years.This second species, was discovered in **Kerala**. It has a pale creamy-rose head and a triangular-shaped dull grey-white abdomen with dense grey-black mottling.

Mookambika Wildlife Sanctuary

- **Mookambika Wildlife Sanctuary**, located in **Karnataka's Udupi district** within the **Western Ghats**, is home to diverse flora like **evergreen and deciduous forests** and fauna including **tigers, leopards, and king cobras**.
- The **Chakra and Sowparnika rivers** flow through this rich biodiversity hotspot.

Alpkarakushkyrgyzicus

Context

- A newly discovered dinosaur species, ***Alpkarakushkyrgyzicus.***

Details

- ***Alpkarakushkyrgyzicus*** roamed what is now **Kyrgyzstan** in **Central Asia** around 165 million years ago.
- This species is notable for its unusual "eyebrow" bone, which likely supported a horn.
- Studies indicate that **Alpkarakushkyrgyzicus** belongs to the **metriacanthosaurids** and is related to predatory dinosaurs from **East Asia**.

Horseshoe Crabs

Context

- The Zoological Survey of India and the Odisha Forest Department have joined hands to **tag horseshoe crabs along the State's coast for its conservation and management.**

About

- **Horseshoe crabs** have existed for over **300 million years**, making them older than dinosaurs and earning them the title of "living fossil" due to their minimal morphological changes.
- These **arthropods** from the family **Limulidae** are the only surviving **xiphosurans** and are **chelicerates**, **not true crabs or crustaceans**. There are four living species: **Limulus polyphemus** in North and Central America, and three Indo-Pacific species: **Tachypleus gigas**, ***Tachypleustridentatus***, *and* ***Carcinoscorpiusrotundicauda***. Horseshoe crabs are mostly marine but can live in **brackish water** and are primarily **benthic**.
- Their **blood** is crucial for the medical industry, used in **Limulus amebocyte lysate** to detect bacterial endotoxins and test **injectables and medicines**.
- In India, **Tachypleus gigas** and **Carcinoscorpiusrotundicauda** are found along the northeastern coast, with **Carcinoscorpiusrotundicauda** also present in the **Sundarbans mangroves** of West Bengal.
- **Limulus polyphemus** is listed as **Vulnerable**, **Tachypleustridentatus** as **Endangered**, and **T. gigas** and **Carcinoscorpiusrotundicauda** as **Data Deficient**.
- They are protected under **Schedule 2** of the **Wildlife Protection Act, 1972**.

APTI PLUS

Gentoo Penguin

Context

- **Sphen**, the famous **Gentoo Penguin**from a world-renowned same-sex couple, has passed away in Australia.

Gentoo Penguin

- The gentoo penguin, part of the **Pygoscelis** genus, has four recognized subspecies: **p. taeniata** (eastern), **p. papua** (northern), **p. ellsworthi** (southern), and **p. poncetii** (South Georgia).
- Characterized by its wide white stripe and bright orange-red bill, the gentoo penguin also has distinctive pale whitish-pink webbed feet and a prominent tail.
- Gentoo penguins primarily feed on **fish**, **krill**, **shrimp**, and **cephalopods**, and are considered **opportunistic feeders**.
- They have a specialized **salt gland** to manage the high sodium levels from their salty diet. While the population of **Pygoscelispapua** is increasing in the Antarctic, gentoo penguins are listed as **Near Threatened** on the **IUCN Red List** due to threats like **pollution**, **hunting**, **fishing**, and **human activities**.

Gongronemasasidharanii

Context

- A new plant species, ***Gongronemasasidharanii***, has been identified in **Pampadum Shola National Park.**

Details

- Discovered during a 2019 survey, it features smooth stems, small urn-shaped flowers, and distinct morphological traits such as **elliptic-oblong leaves** and **larger petioles**.
- **Pampadum Shola National Park**, the smallest park in Idukki, is located near the Tamil Nadu border and is part of the proposed **Palani Hills Wildlife Sanctuary**.
- It harbors unique montane evergreen shola forests and is home to the **Nilgiri marten**, a **Vulnerable** species listed on the **IUCN Red List**. The park's fauna includes rare birds such as the **Nilgiri wood-pigeon** and **Nilgiri flycatcher**, but faces threats from invasive **eucalyptus trees** and surrounding plantations.

Glyptobasisdentifera

Context

- A rare species of **owlfly**: ***Glyptobasisdentifera*** has been rediscovered after **75 years** in **Kerala**.

Details

- Owlflies belong to the Order **Neuroptera** (holometabolous insects).
- *Holometabolous insects are insects that undergo complete metamorphosis,which is a type of insect development that includes four distinct life stages: egg, larva, pupa, and adult.*
- Owlflies perch on grass and near dense vegetation, becoming active at dusk and attracted to lights. Their flight period in Kerala is from September to November.

5.2 THREE NEW RAMSAR WETLAND SITES

Context

- India has recently added three new **Ramsar Wetland** sites, increasing the total to **85**.

New Ramsar Sites

State

- **Tamil Nadu**

Site

- **Nanjarayan Bird Sanctuary**

Details

- Spanning **125.865 hectares** in **Uthukuli Taluk, Tiruppur District**; about **10 km north** of Tiruppur city. Supports **191 bird species**, **87 butterfly species**, **7 amphibians**, **21 reptiles**, **11 small mammals**, and **77 plant species**. Essential for resident and migratory birds,

providing crucial feeding and nesting grounds and serving as a vital water source for local agriculture.

State

- **Tamil Nadu**

Site

- **Kazhuveli Bird Sanctuary**

Details

- Covering **5,151.6 hectares**; designated as Tamil Nadu's **16th bird sanctuary** in **2021**. Located on the **Coromandel Coast** in **Villupuram District**; one of the largest wetlands in peninsular India. Connects to the **Bay of Bengal** via **Uppukalli Creek** and **Edayanthittu Estuary**. Supports diverse water features, serves as a critical stopover for migratory birds along the **Central Asian Flyway**, and is a significant breeding ground for resident species and fish.

State

- **Madhya Pradesh**

Site

- **Tawa Reservoir**

Details

- Located at the confluence of the **Tawa** and **Denwa rivers** near **Itarsi**; covers **20,050 hectares**. Used for **irrigation**, **power generation**, and **aquaculture**. Lies within the **Satpura Tiger Reserve**, supporting a wide range of aquatic flora and fauna, including rare and endangered species. Crucial habitat for local and migratory birds with notable **ecological**, **archaeological**, **historical**, and **forestry significance**.

Existing Ramsar Sites (82)

State/UT	No. of Sites	Names of Sites
Andhra Pradesh	1	Kolleru Lake
Assam	1	DeeporBeel
Bihar	3	Kanwar Lake, Nagi Bird Sanctuary, Nakti Lake
Goa	1	Nanda Lake
Gujarat	4	Khijadiya, Nalsarovar, Thol Lake, Wadhvana Wetland
Haryana	2	Sultanpur National Park, Bhindawas Wildlife Sanctuary
Himachal Pradesh	3	Chandra Taal, Pong Dam Lake Wildlife Sanctuary, Renuka Lake
Jammu & Kashmir	5	Hokersar Wetland, Hygam Wetland Conservation Reserve, Shallabugh Wetland, Mansar-Surinsar Wildlife Sanctuary, Wular Lake
Karnataka	4	Ranganathittu Bird Sanctuary, Ankasamudra Bird Conservation Reserve, Aghanashini Estuary, Magadi Kere Conservation Reserve
Kerala	3	Ashtamudi Wetland, Sasthamkotta Lake, Vembanad-Kol Wetland
Ladakh	2	Tso Kar, Tsomoriri Lake
Madhya Pradesh	4	Bhoj Wetland, Sakhya Sagar, Sirpur Lake, Yashwant Sagar
Maharashtra	3	Lonar Lake, NandurMadhameshwar, Thane Creek
Manipur	1	Loktak Lake
Mizoram	1	Pala Wetland
Odisha	6	Ansupa Lake, Bhitarkanika Mangroves, Chilika Lake, Hirakud Reservoir, Satkosia Gorge, Tampara Lake
Punjab	6	Beas Conservation Reserve, Harike Wetland, Kanjli Wetland, Keshopur-Miani Community Reserve, Nangal Wildlife Sanctuary, Ropar Wetland
Rajasthan	2	Keoladeo National Park, Sambhar Lake
Tamil Nadu	16	Chitrangudi Bird Sanctuary, Gulf of Mannar Marine Biosphere Reserve, Kanjirankulam Bird Sanctuary, Karaivetti Bird Sanctuary,

		Karikili Bird Sanctuary, Koonthankulam Bird Sanctuary, Longwood Shola Reserve Forest, Pallikarnai Marsh Reserve Forest, Pichavaram Mangrove, Point Calimere Wildlife and Bird Sanctuary, SuchindramTheroor Wetland Complex, Udhayamarthandapuram Bird Sanctuary, Vadavur Bird Sanctuary, Vedanthangal Bird Sanctuary, Vellode Bird Sanctuary, Vembannur Wetland Complex
Tripura	1	Rudrasagar Lake
Uttar Pradesh	10	Bakhira Sanctuary, Haiderpur Wetland, Nawabganj Bird Sanctuary, Parvati Arga Bird Sanctuary, Saman Bird Sanctuary, Samaspur Bird Sanctuary, Sandi Bird Sanctuary, SarsaiNawarJheel, Sur Sarovar, Upper Ganga River
Uttarakhand	1	Asan Barrage
West Bengal	2	East Kolkata Wetlands, Sundarban Wetland

Recent Developments in Wetland Conservation

- **Wetlands of India Portal:** Launched in October 2021; provides detailed information on wetlands.
- **National Wetland Decadal Change Atlas:** Tracks wetland changes over the past decade.
- **Centre for Wetland Conservation and Management:** Established in 2021; addresses research needs in wetland conservation.
- **Wetlands Rejuvenation Programme:**Initiated in 2020; aims to rejuvenate over **500 wetlands**.
- **Integration with River Basin Management: NamamiGange** program integrates wetland conservation with river basin management.
- **National Plan for Conservation of Aquatic Ecosystems:** Combines conservation programs to protect aquatic ecosystems.
- **Amrit Dharohar Scheme:**Launched in 2023; optimizes wetland utilization to enhance **biodiversity**, **carbon stock**, and **eco-tourism**.
- **National Wildlife Action Plan (2017-2031):**Focuses on the conservation of **inland aquatic ecosystems**, including wetlands.

5.3 SHORT ARTICLES

Gross Environment Product (GEP) Index

Context

- Uttarakhand has become the first state globally to launch the **Gross Environment Product (GEP) Index**, a pioneering tool that extends beyond traditional **ecosystem service assessments** to include **ecosystem growth**.

What is GEP?

- The **GEP Index** evaluates not just the benefits from the environment but also the contributions made back to it. It encompasses four pillars: **air**, **soil**, **trees**, and **water**.

Developed By

- Anil Prakash Joshi, founder of the **Himalayan Environmental Studies and Conservation Organisation**, created the **GEP Index** with the aim of making it as widely accepted as the **GDP formula**.

Calculation

- The **GEP Index** is calculated using: **GEP Index = (Air-GEP + Water-GEP + Soil-GEP + Forest-GEP)**

- For example, in **forest assessments**, new trees are categorized by **species value**, **survival rates**, and **logging impacts**, offering a refined approach to traditional calculations.
- Similarly, **water assessments** include natural processes and **conservation efforts** like **Amrit Sarovars**.

Critical Perspectives

- Critics argue that the **GEP Index** may oversimplify the complex **human-environment relationship**.
- They suggest that a more detailed **categorization** and **regulation** based on **environmental impact** might be necessary to prevent potential **ecological damage**.

Conceptual StrengthGEP

- Provides a valuable method for translating diverse **ecological services** into a unified **monetary value**, reflecting their economic and well-being contributions.

Challenges

- Concerns about **scientific rigor**, **transparency**, and **regional applicability** of the **GEP Index** remain.
- The effectiveness of the **GEP Index** in real-world applications is still being evaluated.

Impact of Artificial Lights on Insects

Context

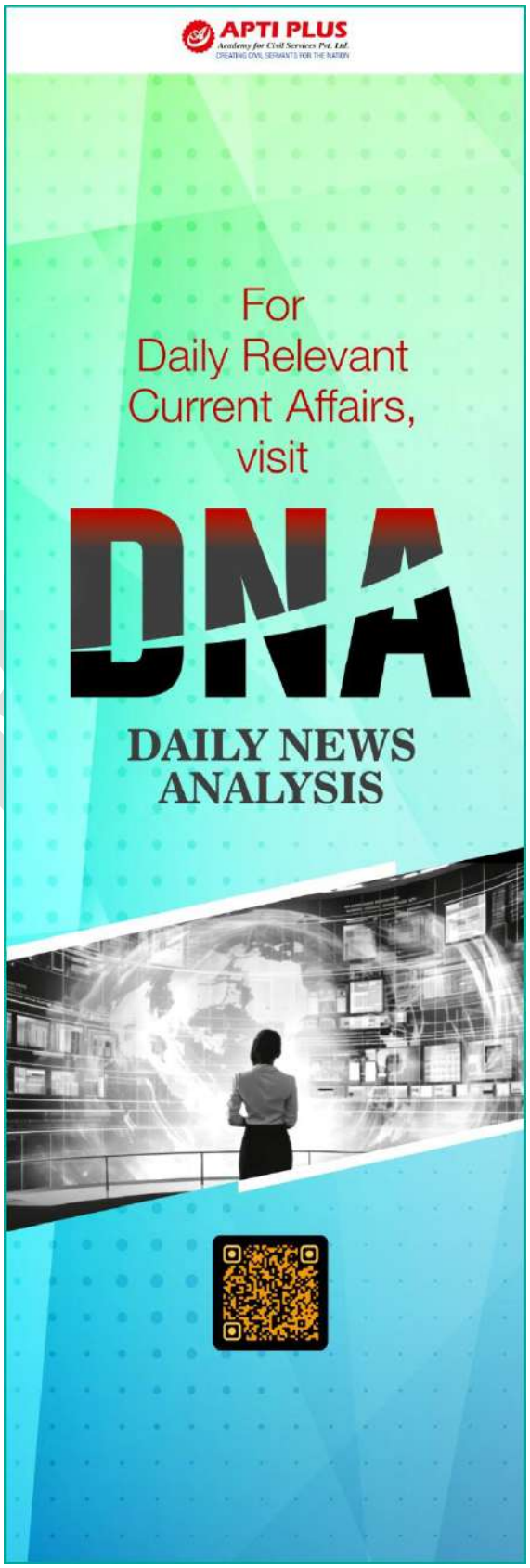
- Nighttime artificial lights, like streetlights, can toughen urban tree leaves, making them less attractive to insects. This may impact urban food chains, as shown in a study published in *Frontiers in Plant Science*.

Details

- The study, "Artificial Light at Night Decreases Leaf Herbivory in Typical Urban Areas," was conducted by the University of Chinese Academy of Sciences (Beijing).

Key Findings

- **Leaf Toughness and Insect Activity**: Higher light levels make leaves tougher and reduce insect feeding. Brightest areas showed no insect damage.
- **Nutrient and Chemical Changes:** Light exposure affects leaf nutrients and defenses. For example, Japanese pagoda trees with more light had less phosphorus and insect damage.
- **Ecological Implications:** Reduced herbivory may



disrupt food chains, affecting insectivorous predators and overall ecosystem balance.

Possible Explanations

- **Photosynthesis Stress**: Continuous light might stress plants through extended photosynthesis, potentially harming their health.

Gymnemasylvestre (Gurmar)

Context

- Researchers have discovered various medicinal plants on **Brahmayoni Hill** in Gaya, Bihar, including **Gymnemasylvestre** (Gurmar), known for its anti-diabetic properties.

GymnemaSylvestre

- **Origin**: A perennial vine native to Asia, Africa, and Australia.
- **Uses**: Known in Ayurvedic medicine as **Gurmar** ("sugar destroyer"). It is a key ingredient in the anti-diabetic drug **BGR-34**, developed by the Council of Scientific and Industrial Research.

Description

- **Appearance**: Climbing plant with soft-haired, elongated-oval leaves and small yellow flowers.
- **Properties**: Blocks sweet taste and reduces sugar absorption.

Benefits

- **Sweet Taste Blockage**: Gymnemic acids in the leaves temporarily suppress sweetness.
- **Sugar Absorption**: Reduces sugar intake and enhances insulin secretion.

Modern Medicine

- **BGR-34**: An Ayurvedic formulation with Gurmar, validated for managing blood sugar and obesity.
- **Uses**: Reduces sugar cravings, aids in weight loss, and has traditional uses for various ailments.

Brahmayoni Hill

- Located in Gaya, Bihar, it features the **Brahmayoni** and **Matreoni caves** and an ancient temple. It is historically significant as the site where Buddha preached the fire-sermon.

Bhoj Wetland

Context

- The **Union Government** has dismissed concerns about Bhoj Wetland in Bhopal being at risk of delisting from the **Ramsar Convention list of wetlands of international importance.**
- Reports suggested Bhoj Wetland **could face delisting** due to a proposed road through its catchment area.

Note

- **Ramsar Convention**: Established in **February 1971 in Ramsar, Iran,** under UNESCO, aims to conserve and ensure the sustainable use of wetlands worldwide.

Bhoj Wetland

- Located in **Bhopal, Madhya Pradesh**, India.
- Comprises **Bhojtal (Upper Lake)** and **Lower Lake**.
- **Bhojtal**: Covers **31 km²**, drains a **361 km²** catchment area.
- **Lower Lake**: Spans **29 km²**, with a **9.6 km²** catchment, mainly urbanized.
- **Historical Background**: Bhojtal was created by **Paramara Raja Bhoj** (1005-1055) with an earthen dam. The Lower Lake was established in 1794 by **Nawab Chhote Khan**.
- **Significance**: Recognized **under the Ramsar Convention since August 2002,** it supports diverse flora and fauna, including numerous waterbirds.

Guru Ghasidas-Tamor Pingla Tiger Reserve

Context

- The **Chhattisgarh government** has announced the creation of a new tiger reserve, its fourth.

Current Reserves in Chattisgarh

- **Indravati** (Bijapur district), **Udanti-Sitanadi** (Gariaband), **Achanakmar** (Mungeli)

New Reserve

- **Name**: **Guru Ghasidas-Tamor Pingla Tiger Reserve**
- **Location**: Integrates **Guru Ghasidas National Park** and **Tamor Pingla Sanctuary**, spanning **Manendragarh-Chirmiri-Bharatpur, Koriya, Surajpur**, and **Balrampur** districts.

Approval and Recommendations

- **State Wildlife Board** recommended the reserve.
- **National Tiger Conservation Authority** approved it, under the **Ministry of Environment, Forest and Climate Change**.

Impact

- Expected to boost **eco-tourism** and **local employment**.
- Jobs may include **guides**, **tourist vehicle operators**, and **resort managers**.
- **Additional funds from** the **National Project Tiger Authority** will support **livelihood development projects** in surrounding villages.

Miombo Forest

Context

- Recently, in **Maputo**, the capital of **Mozambique**, the **United Nations Food and Agriculture Organization (FAO)** and the **Italian Agency for Development Cooperation (AICS)** signed two crucial agreements aimed at preserving the **miombo forest** and enhancing trade in the border region between **Mozambique** and **Zimbabwe**.

All about Miombo Forest

- The **miombo forest**, stretching across **central and southern tropical Africa**, includes countries such as **Angola**, **Tanzania**, the **Democratic Republic of the Congo**, **Malawi**, **Mozambique**, **Zambia**, and **Zimbabwe**.
- This diverse ecosystem thrives in climates ranging from **humid** to **semi-arid** and from **tropical** to **subtropical/temperate**.
- Dominated by tree species like **Brachystegia** and **Julbernardia**, the forest is known for its seasonal leaf shedding, with trees losing leaves during the **dry season** and producing new ones before the **wet season**.
- The miombo is classified into **dry** and **wet woodlands** based on annual rainfall, with the dry woodlands receiving less than **1000 mm** of rainfall annually and found in regions like **Zimbabwe** and **central Tanzania**, while the wet woodlands, receiving over **1000 mm** of rainfall, are located in **northern Zambia** and **eastern Angola**.
- This forest not only supports a rich array of **flora and fauna**, including the **African elephant** and several **endemic bird species**, but also provides vital resources for **rural communities**, including fruits, honey, fodder, and fuelwood.
- The name 'miombo' originates from the **Bemba** language, referring to the Brachystegia species, and the forest's classification reflects its varied rainfall and vegetation characteristics.

India's First Indigenous Methanotroph Cultures

Context:

- Agharkar Research Institute has isolated and described India's first indigenous **methanotroph** cultures.

Background:

- **Methanogens:** Microorganisms producing **methane**, found in anaerobic environments like marshes and rice fields.
- **Methanotrophs:** Organisms that oxidize methane to obtain energy. They are mostly **aerobic**, using **methane monooxygenase** to convert methane into methanol.

Recent Discovery:

- **Methane,** a major **greenhouse gas** with a warming potential 26 times greater than **CO2**, is mitigated by methanotrophs.
- **New genus and species discovered**: **Methylocucumis oryzae**, nicknamed '**methane-eating cucumbers**' for their oval shape.**Source:Rice fields** and **wetlands** in Western India, Pune's **stone quarry**.

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- **Methylocucumis oryzae** can reduce methane levels and promote **rice plant growth**.

Unique Characteristics:

- Size: 3-6 µm, larger than most bacteria.Temperature: **Mesophilic**, thriving up to 37°C.
- Colony: Light pale pink, with a **carotenoid pathway**.

Challenges and Positive Outlook:

- While its slow growth limits large-scale use, **Methylocucumis oryzae** shows great promise. Its ability to mitigate methane and support rice cultivation highlights its potential for positive environmental and agricultural impacts. Continued research may further unlock its benefits in combating **climate change**

5.4 SNIPPETS

Topics	Details
Tale Wildlife Sanctuary	• **Tale Wildlife Sanctuary**has recorded 85 butterfly species, including the rare **Kaiser-i-Hind**, **Bhutan Glory**, and **Brown Gorgon**. • **Tale Wildlife Sanctuary** in located in Arunachal Pradesh and it was established in 1995. • The sanctuary, located between the ***Subansiri***, ***Sipu***, *and* ***Pange*** *rivers*, ranges from **1,200 to 3,000 m** in elevation and **features subtropical and temperate forests.** • It is home to endangered species like the **clouded leopard** and **Malayan giant squirrel**, and protects 16 endangered plant species such as ***Panax sikkimensis*** and ***Lilium grandiflora***.
ChandakaDampara Wildlife Sanctuary	• A **sambar** and a **barking deer** will be released into the wild at the **Chandaka Wildlife Sanctuary**. • **Established**: 1982. **Location**: Khurda and Cuttack districts, Odisha. • **Flora and Fauna**: Moist deciduous forests, bamboo groves; wildlife includes Indian Elephant, Leopard, Spotted Deer, Wild Boar; noted for diverse bird species. • **Biodiversity**: Eastern Ghats hotspot, home to endangered and endemic species.

5.5 ADDITIONAL TOPICS FOR READING FROM IASGYAN WEBSITE

Topics	Date
Regulation Of Exotic Wild Species N India	29th August, 2024
Central Water Commission (CWC)Report on Heavy Metal Concentration	29th August, 2024
Panama Canal	17th August, 2024
Discovery of a new Ceropegia Species	13th August, 2024
Record-Breaking Heatwave in Antarctica	10th August, 2024

6. SOCIAL JUSTICE

6.1 SHORT ARTICLES

New Foster Care Rules in India

Context

- The Ministry of Women and Child Development (WCD) has recently updated the Model Foster Care Guidelines, marking a progressive step towards inclusivity and flexibility in child welfare.

Foster Care v/s Adoption

Foster Care

- **Foster Care is a temporary arrangement where a child**, unable to live with their biological family, is **placed with a non-biological family.**
- This setup is meant to provide safety and stability until a more permanent solution, such as adoption or reunification with the biological family, can be arranged.

Adoption

- It is a **permanent legal process where a child becomes a full member of a new family,** with the same rights as a biological child.
- Once adopted, the child's relationship with their biological family is legally severed, and they are **considered a permanent member of the adoptive family.**

Key Changes Introduced in the Model Foster Care Guidelines

- **Expanded Eligibility**:
  - Inclusion of single individuals (unmarried, widowed, divorced, or legally separated) as eligible foster parents.
  - Previously, only married couples could foster children.
  - Now, single women can foster and adopt children of any gender, though single men are restricted to fostering and adopting only male children.
- **Revised Age Criteria**:
  - For single foster parents, the minimum age is set at 35 years.
  - The maximum age limits are 55 years for fostering a child aged 6 to 12 and 60 years for fostering a child aged 12 to 18.
  - For married couples, a combined age of at least 70 years is required to foster children in these age groups.
- **Reduced Mandatory Fostering Period**:
  - The period of mandatory fostering before adoption has been reduced from five years to two years.
  - This change is aimed at making the adoption process quicker.
- **Online Registration**:
  - The introduction of online registration through the Child Adoption Resource Information and Guidance System (CARINGS).
  - This platform, which was previously used for adoption, now also facilitates the registration and document submission process for foster care.

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6.2 SNIPPETS

Topics	Details
Psychological Profiling	• The **CBI is using psychological profiling** in the Kolkata junior doctor rape-murder case. • Psychological profiling is a **method used in criminal investigations to understand an accused's mental state, personality traits, and motives**. • Methods **include interviews, behavioural observations, polygraph tests, brain mapping, and narco-analysis.** • The accuracy of profiling depends on the psychologists' skills and information quality, and it should be used with forensic evidence and witness statements for a complete case.
SHe Box Portal	• The **Union Ministry of Women and Child Development launched the SHe-Box portal.** • The SHe-Box Portal is a **centralized platform for women to register complaints about sexual harassment in their workplaces.** • The portal aims to streamline the complaint process and ensure efficient handling of cases. • Key features include a centralized repository, real-time monitoring, and time-bound assured redressal.

6.3 ADDITIONAL TOPICS FOR READING FROM IASGYAN WEBSITE

TOPIC NAME	UPLOADED ON IAS GYAN WEBSITE ON:
Witchcraft	10th August, 2024
Women And Men in India 2023	13th August, 2024
Drug Menace In India	29th August, 2024

7. SCIENCE & TECHNOLOGY AND HEALTH

7.1 METAL AIR BATTERIES

Context

- A newly developed device featuring an efficient and durable cathode catalyst, along with an anti-**freezing electrolyte, is designed for zinc-air batteries.**

About Metal-Air Batteries

- Metal-air batteries are a new kind of battery that can store a lot of energy. They are especially useful for electric vehicles (EVs) and renewable energy sources. These batteries use oxygen from the air, which helps them be **lighter and more efficient**.
- These batteries can use lighter metals like **lithium, sodium, potassium, magnesium, aluminum, zinc, and iron** instead of heavy materials.
    - They work by using oxygen from the **air to help produce energy**, which can make them much more powerful.
- These batteries are **important for finding better energy solutions** that are good for the environment.
- **Methods like splitting water, fuel cells, and metal-air batteries** can provide energy with a low carbon footprint, meaning they are cleaner and cause less pollution.

How Metal-Air Batteries Work

- Metal-air batteries work by using a metal (**like lithium, zinc, or aluminum**) as the anode and oxygen from the air as the cathode. When these two parts react, they produce electricity.

Types of Metal-Air Batteries

Lithium-Air Batteries (Li-Air)	• They have a **high energy density** and are lightweight. However, lithium can be unstable and sensitive to moisture, which makes them tricky to use.
Zinc-Air Batteries (Zn-Air)	• Made from zinc, which is **common and cheap**, these batteries are safe to use and have a higher energy density than regular batteries. • They can have issues with recharging and forming dendrites (**tiny growths that can cause problems).**
Aluminum-Air Batteries (Al-Air)	• These batteries have high energy density and use aluminum, which is abundant and environmentally friendly. • They can have corrosion issues and produce hydrogen gas, which needs careful handling.

Advantages of Metal-Air Batteries

- **High Energy Density:** They can **store much more energy** than regular lithium-ion batteries, making them perfect for long trips in electric vehicles.
- **Lightweight:** Since they **use oxygen from the air**, they don't need heavy materials, making them lighter.
- **Cost-Effective:** Metals like **zinc and aluminum** are cheap and easy to find, which can lower production costs.

Challenges and Research Focus

- **Electrode Stability:** The metal can form **dendrites**, which can short-circuit the battery and make it last shorter.
- **Air Electrode Catalysis:** To work well, the battery needs **good catalysts** that help the oxygen reactions happen efficiently and at a low cost.

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- **Moisture and CO2 Sensitivity:** These batteries can be affected by **water and carbon dioxide** in the air, which can hurt their performance.

Applications of Metal-Air Batteries

- **Electric Vehicles (EVs):** These batteries can help electric cars go longer distances, making them a good alternative to regular batteries.
- **Grid Energy Storage:** They are great for **storing energy from renewable sources** like solar and wind power.
- **Portable Electronics:** Their **lightweight and powerful nature** could change how we use portable devices, allowing for longer usage times.

Government Initiatives

- The Government of India has launched a scheme called the **Production Linked Incentive (PLI)** Scheme for **Advanced Chemistry Cell (ACC) Battery Storage**. This scheme aims to promote the production of advanced batteries, including metal-air technologies. It helps make India self-reliant in battery manufacturing and reduces dependence on imports.

Conclusion

- Metal-air batteries offer great advantages in energy storage and cost.
- With ongoing research to overcome challenges and government support like the PLI Scheme, metal-air batteries **could play an important role in the future of electric vehicles and renewable energy systems.**

7.2 NORMS FOR ORGAN TRANSPLANT IN INDIA

Context

- The **Standard Operating Procedure** lists guidelines for the transportation of live human organs from the point of their harvest to their destination, by various modes of transport.

Key Guidelines from TRANSTAN

- **Separate Facilities:** Hospitals that **treat COVID-19 patients and perform organ** transplants must have different wards and operating rooms to prevent infections. Separate paths for doctors and staff treating **COVID-19 patients and those involved** in transplants are also necessary.
- **Periodic Health Checks:** Everyone involved in transplant surgeries must have regular health checks to ensure they are not carrying infections. **This follows the guidelines from the Indian Council for Medical Research (ICMR).**

Transportation of Organs

- The Union **Ministry of Health & Family Welfare** has issued guidelines for transporting live human organs. These rules help move organs quickly from the donor to the recipient using available infrastructure.

National Framework for Organ Transplantation

- India's organ transplant procedures are regulated by **the Transplantation of Human Organs and Tissues Act (THOTA), established in 1994 and amended in 2011.**

About Transplantation of Human Organs & Tissues Act (THOTA), 1994:

THOTA, 1994

- **Objective:** Regulation of removal, storage, and transplantation of human organs & tissues for therapeutic purposes.
- **Purpose:** Prevention of commercial dealings in human organs & tissues.

- **Exclusion:** The subject of artificial organs is not regulated under this Act.

Increase in Lifestyle Diseases

- **Reported by:** Directorate General of Health Services.
- **Diseases:** Increase in Diabetes, Hypertension, Chronic Kidney Disease, Non-Alcoholic Fatty Liver Disease over the past decade.
- **Impact:** These diseases may cause organ damage, and end-stage organ failure may require organ transplants.

National Organ Transplant Program (NOTP)

- **Implemented by:** Government of India.
- **Objective:** Establish a network of organ and tissue transplant organizations at national, regional, and state levels.

Network Establishment

- **Components:** Transplant & retrieval hospitals, tissue banks.
- **Linking:** National, regional, and state-level organizations linked to transplant & retrieval hospitals and tissue banks.

National Registry

- **Purpose:** Maintain a national registry of organ & tissue donors and recipients.
- **Function:** Provide an efficient system for procurement and distribution of organs & tissues from deceased donors.

Program Support

- **Objective:** Support the establishment of new or upgrade existing organ & tissue transplant and retrieval facilities.
- **Facilities:** Establishment of tissue banks.

Key Provisions

- **Authorization & Registration:** Organs can only be transplanted in registered hospitals that meet specific standards.
- **Consent and Donor Eligibility:** Donors must give informed consent after understanding the risks. For deceased donors, family consent is needed.
- **Ethical Committees:** Hospitals must have a committee to approve each transplant, ensuring ethical practices.
- **Brain Death Certification:** Before organs are taken from deceased donors, brain death must be certified by a panel of four doctors.
- **Transparency and Equitable Distribution:** A centralized registry ensures fair and transparent organ distribution based on medical condition, urgency, and waiting time.

COVID-19 Considerations

- **The pandemic made organ transplantation more complicated**. TRANSTAN's new guidelines aim to minimize the risk of COVID-19 transmission among patients and healthcare workers involved in transplants.

About TRANSTAN

- Tamil Nadu is one of the first states to initiate **Cadaver Transplant in 1995**, following the passage of the Transplantation of Human Organs Act in 1994.
- The **Cadaver Transplant Program** was launched by the then Hon'ble Chief Minister **Dr. Kalaignar M. Karunanidhi in 2008.**
- In May 2015, the Cadaver Transplant Programme became a government society named the Transplant Authority of Tamil Nadu (TRANSTAN), under the chairmanship of the Honourable Chief Minister of Tamil Nadu.

Organization Structure of TRANSTAN

Composition of the General Body

S. No	Composition	Designation
1	Hon'ble Chief Minister of Tamil Nadu	President
2	Minister for Finance	Member
3	Minister for Health	Member
4	Secretary to Government, Medical and Family Welfare Department,	Member

	Tamil Nadu	
5	Special Secretary / Joint Secretary to Govt. Medical & Family Welfare, Tamil Nadu	Member
6	Principal Secretary to Government Finance Department, Tamil Nadu	Member

Management Unit of TRANSTAN

- **Chief Executive:** The Member Secretary of TRANSTAN is the Chief Executive, responsible for day-to-day administration and financial management.
- **Composition:** The Management Unit comprises specialists and staff from government departments and NGOs.
- **Functions:** Managed under the supervision, guidance, and control of the Member Secretary.

Functions of TRANSTAN

- Establishing and managing cadaver transplant programs.
- Ensuring ethical practices and transparent processes.
- Coordinating with hospitals, NGOs, and government bodies.
- Overseeing the implementation of the CMCHIS scheme.

Conclusion

- Following these strict rules ensures that organ transplantation in India is safe, ethical, and efficient. The new guidelines are even more important after COVID-19 to protect both recipients and medical staff.

7.3 INDIA WAIVED OFF LOCAL CLINICAL TRIALS

Context

- India's Central Drugs Standard Control Organisation (CDSCO) has issued an order permitting the waiver of local clinical trials.

Background

- The **Central Drugs Standard Control Organization (CDSCO)**has identified certain conditions under which new drugs that have been approved by stringent regulatory **authorities (like the US FDA or EMA) can bypass local clinical trials.**
- **The primary goal** is to provide faster access to essential medications, especially those required to treat life-threatening conditions and rare diseases.
- The **Central Drugs Standard Control Organization (CDSCO)** is the Central Drug Authority for discharging functions assigned to the Central Government under the **Drugs and Cosmetics Act.** CDSCO has six zonal offices, four sub-zonal offices, 13 port offices and seven laboratories under its control.

Major functions of CDSCO:

- **Regulatory control over the import of drugs**, approval of new drugs and clinical trials, meetings of **Drugs Consultative Committee (DCC) and Drugs Technical Advisory Board (DTAB),** approval of certain licenses as **Central License Approving Authority is exercised by the CDSCO headquarters**.

Key Points

- **Emergency Use and Rare Diseases:** The policy is particularly relevant for drugs designed to treat rare diseases or conditions where no alternative therapy exists.
- **Regulatory Confidence:** The waiver applies to drugs that have already undergone rigorous testing and approval processes by established international regulatory bodies.

READ IN DETAIL ON THE IAS GYAN WEBSITE- 13th August.

7.4 ZINCION BATTERIES

Context

- Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR) has partnered with Hindustan Zinc Limited (HZL) to develop and commercialize new zinc materials for low-cost, grid-scale energy storage using indigenous Zn-ion battery technologies.

About Zinc Ion Batteries

- Zinc ion batteries utilize zinc as the **primary material for the anode**, and a material like manganese **dioxide or vanadium oxide** is used for the cathode.
- The **electrolyte usually comprises an aqueous solution**, which is different from the organic solvents used in lithium-ion batteries.
- This **simple composition** offers several advantages over traditional lithium-ion batteries.

Advantages of Zinc Ion Batteries

Safety and Stability:

- Zinc ion batteries are inherently **safer than lithium-ion batteries.** They are less prone to catching fire and do not pose significant risks of explosion, making them suitable for various applications, including large-scale energy storage.

Cost-Effectiveness:

- **Zinc is abundant and relatively inexpensive comparedto lithium**. This makes zinc ion batteries more cost-effective to produce, which can lower the overall cost of energy storage solutions.

Environmental Impact:

- **Zinc ion batteries are more environmentally friendly**. The materials used are non-toxic and pose minimal environmental hazards. Moreover, the aqueous electrolytes used reduce the risk of chemical leaks and pollution.

High Performance:

- These batteries exhibit good performance in terms of energy density and cycle life. They can **efficiently store and deliver energy, making them viable for both small-scale electronic devices and large-scale energy storage systems.**

Applications of Zinc Ion Batteries

Grid Storage:

- Zinc ion batteries are **well-suited for grid storage applications**.
- Their safety and cost advantages make them ideal for storing renewable energy from sources like **solar and wind, ensuring a stable energy supply.**

Electric Vehicles (EVs):

- While still in the development phase, zinc ion batteries have the potential to be used in electric vehicles.
- **Their safety, coupled with improvements in energy density**, could make them a viable alternative to lithium-ion batteries for EVs.

Portable Electronics:

- These batteries can also be used in portable electronic devices, offering a safer and potentially **longer-lasting power source.**

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Future Prospects

- The increasing emphasis on sustainable energy storage solutions provides a robust platform for the development and adoption of zinc ion batteries.
- As research progresses, these batteries are expected to play a significant role in the energy storage landscape, contributing to the global shift towards green energy.

Conclusion

- Zinc ion batteries represent a promising **advancement in energy storage technology**.
- Their safety, cost-effectiveness, and environmental benefits make them a viable alternative to lithium-ion batteries.
- With **continuous research and development**, zinc ion batteries have the potential to revolutionize energy storage systems and support sustainable energy initiatives globally.

7.5 SHORT ARTICLES

Zika

Context:

- Union Minister of State for Health and Family Welfare Anupriya Patel said the government of India has formulated an action plan for managing Zika virus Disease.

Details:

About Zika Virus:

*Zika is a mosquito-borne **virus identified in Uganda in 1947**. The infection, often **mild and self-limiting**, poses significant **risks to pregnant women** and their fetuses, leading to microcephaly in newborns. It is also linked to **Guillain-Barré syndrome**, a rare nerve disorder causing muscle weakness and paralysis.*

Virus	**Zika virus (Flavivirus genus, Flaviviridae family)**
Transmission	**Aedes species mosquito** (Aedes aegypti and Aedes albopictus)
Associated Diseases	Microcephaly in newborns, Guillain-Barré syndrome
First Discovery	**Zika Forest, Uganda, 1947**
First Human Case	1952
Significant Epidemic	Brazil, 2015
WHO Declaration	Public Health Emergency of International Concern (PHEIC), 2016
Spread in India (2018)	**Gujarat, Madhya Pradesh, Rajasthan**
Spread in India (2021)	Kerala, Maharashtra
Microcephaly in India	**Not recorded**

Osmolyte

Context:

- A recent study highlights the role of small molecules known as osmolytes in helping proteins maintain their structure and function during stressful conditions.

About Osmolyte:

- Osmolytes are **low-molecular-weight organic compounds** that influence the properties of biological fluids.
- Their primary role is to maintain the **integrity of cells by affecting the viscosity**, melting point, and ionic strength of the aqueous solution.
- **When a cell swells due to external osmotic pressure**, membrane channels open and allow efflux of osmolytes carrying water, restoring normal cell volume.
- These small molecules play a vital role in **helping cells endure stress by stabilizing proteins** and preventing misfolding.
- When proteins misfold, they **can no longer perform their necessary roles**, which can lead to various diseases.

- Therefore, osmolytes are essential for preserving protein stability and represent promising targets for the development of new drugs.
- **Examples: Common osmolytes include amino acids, sugars and polyols, methylamines, methyl sulfonium compounds, and urea.**

Mechanism of Action

- Osmolytes are **small organic molecules that stabilize proteins** by lacking themselves from the protein surface, which encourages a more compact and stable protein structure.
- They **help proteins maintain their proper shape and function**, even under stressful conditions like high temperatures or extreme ph. l
- By **counteracting denaturing forces**, osmolytes keep proteins from misfolding or aggregating.

EOS-8

Context

- The Earth Observation Satellite-8 (EOS-8) is likely to be launched on August 15.
- The EOS-8 will be launched by the Small Satellite Launch Vehicle (SSLV)-D3.

READ IN DETAIL ON THE IAS GYAN WEBSITE- 8th August

Rashtriya Vigyan Purushkar

Context:

- The Office of Principal Scientific Adviser to the Government of India announced the first-ever Rashtriya Vigyan Puraskar (RVP) awards for Indian scientists.

Objective

- To recognize notable and inspiring contributions made by scientists, technologists, and innovators in various fields of science and technology.
- The RVP is one of the highest recognitions in India for these fields.

Eligibility

- **Scientists, technologists, and innovators** in government and private sectors, or individuals outside any organization.
- People of **Indian origin abroad** with exceptional contributions benefiting Indian communities.

Award Categories

- **Vigyan Ratna (VR)**: Lifetime achievements in science and technology.
- **Vigyan Shri (VS)**: Distinguished contributions to science and technology.
- **Vigyan Yuva Shanti Swarup Bhatnagar (VY-SSB)**: Young scientists with exceptional contributions.
- **Vigyan Team (VT)**: Teams of three or more who have made exceptional contributions.

Max. No. of Awards

- **Vigyan Ratna (VR)**: 3
- **Vigyan Shri (VS)**: 25
- **Vigyan Yuva Shanti Swarup Bhatnagar (VY-SSB)**: 25
- **Vigyan Team (VT)**: 3

Ceremony Details

- Awards announced on **National Technology Day** (11th May) annually.
- Award Ceremony held on **National Space Day** (23rd August) annually.
- Awards conferred by the **Hon'ble President or Vice President** of India.
- Ceremony organized at Vigyan Bhavan or a suitable alternative venue.
- Awards commence in the year 2024.

Silica Dust

Context:

- Researchers in the UK recommend new limits on daily silica dust exposure in industries like construction, mining, and dentistry to prevent serious health risks.

READ IN DETAIL ON THE IAS GYAN WEBSITE- 10th August

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Trichophyton indotineae

Context:

- The rise of drug-resistant fungal infections, Trichophyton indotineae, is emerging as a significant health concern in India.

About Trichophyton indotineae:

- It is a **dermatophyte**, a type of fungus that primarily affects the skin, hair, and nails. It is known for causing conditions commonly referred to as **"jock itch" or ringworm.**
- The **hot, humid climate and dense population** of India create an ideal breeding ground for this fungus, making it a pervasive problem, especially in rural areas where healthcare access is limited.

Gaganyatri going to ISS

Context:

- As participants of the Axiom-4 mission, Shubhanshu Shukla or Prashanth Nair will fly to the ISS along with two other astronauts.

READ IN DETAIL ON THE IAS GYAN WEBSITE- 12th August

Effect of climate change on day's length

Context:

- Scientists have discovered that melting polar ice caps, driven by climate change, are causing Earth's rotation to slow down slightly.

The Physics Behind the Phenomenon

- The primary mechanism through which climate change affects the Earth's rotation is the melting of polar ice caps. When ice at **the poles melts, the water flows towards the equator**.
- This redistribution of mass causes the Earth to bulge slightly at the equator, slowing its rotation.
- As a result, the time it takes for the Earth to complete one full rotation increases, leading to longer days.
- This can be understood through the conservation of angular momentum.
- As the mass moves away from the **axis of rotation (towards the equator),** the rotational velocity decreases, similar to how a figure skater slows down when extending their arms.

Impact on Timekeeping

- Even minor changes in Earth's rotation can affect **global timekeeping systems, digital infrastructure, and GPS satellites,** leading to significant navigation and spacecraft communication errors.

Effects of Melting Polar Ice

- The melting of polar ice contributes to **sea-level rise and redistributes mass** from poles to the equator, increasing Earth's oblateness and impacting rotational dynamics.

Human Impact

- **Human activities** are altering Earth's climate and fundamental physical properties, with significant responsibilities for the future.

Need for Climate Action

- Urgent and sustained efforts are needed to **reduce greenhouse gas emissions and implement sustainable practices** to mitigate far-reaching consequences, including changes in Earth's rotation.

Broader Implications

- The melting of polar ice caps is a planetary issue that affects Earth's **rotation and the length of days**, emphasizing the critical need for global cooperation and climate action.

Canine distemper

Context:

- To protect the wildlife in and around the Corbett Tiger Reserve in Uttarakhand, stray dogs in villages within a two-kilometre radius of the reserve's boundaries will be vaccinated against the canine distemper virus.

Details:

Nature

- Canine Distemper Virus (CDV) is caused by the **Morbillivirus** and affects the respiratory, gastrointestinal, and central nervous systems of animals.

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Symptoms

- **Initial Symptoms:** These include fever, nasal discharge, coughing, lethargy, reduced appetite, and vomiting.
- **Advanced Symptoms:** As the disease progresses, it can lead to neurological problems such as seizures, twitching, and paralysis.

Transmission

- The virus spreads **through direct contact** with infected animals or through aerosol droplets from coughing and sneezing.
- Contaminated food and water can also be sources of infection.
- **The highly contagious nature of CDV** makes it a significant threat in environments where animals are in close contact, such as shelters and wildlife reserves.

Treatment

- **No cure or approved** antiviral drugs exist. Vaccination is the most effective measure to prevent Canine Distemper.
- Ensuring that pets receive their vaccinations on schedule is crucial. Additionally, in wildlife conservation areas, proactive measures are essential.

Case Study

- For example, recent efforts in the **Corbett Tiger Reserve** involve the vaccination of stray dogs within a 2 km radius of the reserve's boundaries.
- This precaution aims to protect the endangered tiger population from potential CDV outbreaks, given that tigers can also be affected by the virus.

Microwave ovens

Context:

- According to a new study 'The microwave bacteriome: biodiversity of domestic and laboratory microwave ovens'- Microwave ovens used in homes, offices, and laboratories host thriving communities of microbes.

How Microwave Ovens Work?

- **Microwave ovens use electromagnetic waves**, specifically microwaves, to heat food.
- These waves excite water molecules within the food, causing them to vibrate and produce heat.
- This method is **efficient and convenient**, making microwave ovens popular in both home kitchens and commercial settings.

The Microwave Microbiome

- Recent research has discovered that microwave ovens, much like other household appliances such as coffee makers and dishwashers, host distinct microbial communities.
- These communities include bacteria, viruses, and fungi, which can thrive in the unique environment of a microwave.

Factors Influencing the Microwave Microbiome

- **Location:** The location of the microwave significantly affects its microbial community.
  - **For example,** microwaves in office spaces may have different microbial compositions compared to those in home kitchens due to varying usage patterns and cleaning practices.
- **Usage Patterns:** Frequency and type of food heated also influence the microbiome.
  - **Microwaves used frequently for reheating leftovers** might harbor different microbes compared to those used occasionally.
- **Hygiene Practices:** Regular cleaning and maintenance play a crucial role in controlling microbial growth.
  - **Poor cleaning habits** can lead to the accumulation of food particles and moisture, providing a breeding ground for microbes.

Types of Microbes Found

- **Researchers have identified a range of extremophiles**—microorganisms that can thrive in extreme conditions—within microwave ovens.

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- These microbes are **capable of surviving high temperatures** and varying moisture levels, making the microwave environment suitable for their growth.

Dysbiosis

Context:

- **Antibiotics, particularly broad-spectrum ones,** can disrupt gut bacteria, leading to dysbiosis with potentially severe and enduring effects.

What is Dysbiosis?

- Dysbiosis occurs when the **composition of the microbiome** is disrupted, leading to an overgrowth of harmful microbes at the expense of beneficial ones.
- This imbalance can result from various factors, but the most significant contributor is the inappropriate use of antibiotics.

Causes of Dysbiosis	Consequences of Dysbiosis	Preventive Measures
Antibiotics Overuse	**Gastrointestinal Disorders**	**Rational Use of Antibiotics**
Antibiotics can indiscriminately kill beneficial bacteria along with harmful ones.	Linked to conditions such as IBS, IBD, and colorectal cancer.	Use antibiotics only as prescribed by a healthcare professional and avoid self-medication.
Poor Diet	**Immune Dysregulation**	**Healthy Diet**
High in processed foods, sugars, and unhealthy fats can negatively affect gut microbiome diversity.	Can impair the immune system, increasing susceptibility to infections and autoimmune diseases.	Consume a balanced diet rich in fiber, fruits, vegetables, and fermented foods.

SSLV

Context:

- The Indian Space Research Organisation (ISRO) successfully launched the third developmental flight of the Small Satellite Launch Vehicle (SSLV) from the Satish Dhawan Space Centre in Sriharikota.
- The SSLV-D3 placed the Earth observation **satellite EOS-08 precisely into orbit.**
- It also marks the completion of ISRO/Department of Space's SSLV Development Project.
- **NewSpace India Limited (NSIL), ISRO's commercial arm**, and India's private space industry can now produce SSLVs for commercial missions.

READ IN DETAIL ON THE IAS GYAN WEBSITE- 17th August

Vaccinederived Polio

What is vaccine-derived polio?

- Vaccine-derived polio is a rare condition that occurs when the **weakened (also called attenuated) strain of poliovirus used in the oral polio vaccine (OPV) mutates** and regains the ability to cause paralysis.
- **Polio, or poliomyelitis, is a highly contagiousviral disease** that primarily affects children under five.
- The **oral polio vaccine (OPV)** has been instrumental in controlling and eliminating polio in many regions.
- However, in rare cases, the attenuated (weakened) virus in the OPV can mutate over time and revert to a form capable of causing paralysis.

Fixed Dose Combination Drugs

About Fixed Dose Combination Drugs

- FDCs are designed to simplify treatment regimens, improve patient compliance, and enhance therapeutic efficacy.
- By **combining multiple drugs into one**, FDCs can reduce the pill burden and potentially lower healthcare costs.
- Some common examples include **combination antibiotics, painkillers, and drugs for hypertension and diabetes.**

Key Reasons for the Ban

- **Lack of Therapeutic Justification**: Many FDCs were found to have no additional therapeutic benefit over their individual components.
- **Potential Health Risks**: Some combinations posed health risks due to drug interactions, which could lead to severe side effects or reduced efficacy.
- **Regulatory Oversight:** The absence of rigorous clinical trials and studies to support the safety and efficacy of these combinations was a major concern.

Examples of Banned FDCs

- The banned FDCs include a variety of drugs commonly used to **treat colds, fevers, pain, hypertension, and infections.**

Tanager-1

Details

Purpose

- Track methane and carbon dioxide emissions

Development

- Developed by a coalition including NASA's Jet Propulsion Laboratory

Launch Vehicle

- Launched aboard a SpaceX Falcon 9 rocket

Technology

- Imaging spectrometer technology to measure light wavelengths reflected by Earth's surface

Functionality

- Identifies unique spectral fingerprints of gases like methane and carbon dioxide

Coverage

- Scans 130,000 square kilometers of Earth's surface daily

Application

- Pinpoints emission sources, including individual facilities

Significance

- Data is crucial for accelerating efforts to mitigate harmful emissions

Why Track Methane Emissions?

Potency

- Methane is 80 times more powerful than carbon dioxide over a 20-year period

Contribution to Warming

- Responsible for 30% of global warming since the Industrial Revolution

Health Impact

- Contributes to ground-level ozone, causing about one million premature deaths yearly

Main Source

- Fossil fuel operations, contributing to 40% of human-caused methane emissions

Importance of Reduction

- Reducing methane emissions is crucial to slowing climate change and improving air quality

READ ABOUT AES- 27th August

Sonoluminescence

Context:

- Sonoluminescence is a fascinating phenomenon where bubbles in a liquid emit light when subjected to intense sound waves.

About:

- Sonoluminescence refers to the phenomenon of producing light through the irradiation of liquids with ultrasonic waves, resulting from the interaction of bubbles formed by cavitation.

There are two types of sonoluminescence:

- Multiple-bubble sonoluminescence (MBSL)
- Single-bubble sonoluminescence (SBSL)

Discovery

- **First** observed in 1934 by two German **engineers studying sonar, which is similar to how bats use sound waves for navigation.**

How it Works

- **Sound Wave Interaction:** A trapped bubble in a liquid is subjected to powerful sound waves, causing it to rapidly expand and contract.
- **Extreme Conditions:** During contraction, the bubble's temperature spikes to several thousand kelvins, ionizing the gases inside and emitting light for a trillionth of a second.

Natural Occurrence

- **Pistol Shrimp:** In nature, the pistol shrimp (**family *Alpheidae***) snaps its claw to create a high-velocity water jet, forming a bubble that collapses with a loud sound, intense heat, and a brief flash of light.

Applications

- **Scientific Curiosity:** The mysterious nature of sonoluminescence continues to intrigue scientists and holds potential for future applications.

7.6 SNIPPETS

Topics	Details
Kidlins	• **Kindlins are a family of proteins** that play a crucial role in various cellular processes, particularly in integrin signaling. • Integrins are **cell surface receptors that facilitate cell-extracellular matrix (ECM) adhesion,** which is fundamental for many cellular functions, including migration, proliferation, and survival. • The **proper functioning of integrins is essential for various physiological** processes such as wound healing, immune responses, and embryonic development.
Vampire star	• **Vampire stars, also known as blue straggler stars (BSS),** are found in star clusters and appear younger than their neighboring stars, challenging simple stellar evolution models. • **These stars are naturally in pairs, known as symbiotic binaries**, where the smaller star consumes material from its companion. • Over time, the sucking star becomes larger and turns into a blue straggler.
Legionnaires	• Legionnaires' disease is a serious **type of pneumonia caused by a bacterium called Legionella pneumophila.** • The disease got its name after an outbreak at an American Legion convention in 1976. It remains a major health concern worldwide.
Lyme disease	• Lyme disease is a **vector-borne infection caused by the bacterium Borreliaburgdorferi**, transmitted to humans through the bite of infected black-legged ticks (deer ticks). • It **cannot spread between humans or from pets to humans**, nor through air, food, water, or bites from mosquitoes, fleas, or flies. • The disease is **prevalent in wooded and grassy areas worldwide**, especially during warmer months, and is most common in North America, Europe, and parts of Asia.
Glioblastoma cells	• It is a **very aggressive type of brain cancer** that is difficult to treat with standard methods. However, recent advances in artificial intelligence (AI) are offering new ways to fight this deadly disease. • Like all **cancers, glioblastoma is caused by DNA mutations** that result in uncontrolled cell growth.

	• The underlying causes for these genetic cell mutations are largely unknown.
Candida Auris	• Candida auris, often **abbreviated as C. auris, is** a **pathogenic fungus** that poses a significant threat to public health worldwide. • It was **first identified in Japan in 2009**, it has since been found in multiple countries, raising alarms among health professionals due to its high transmissibility and resistance to multiple antifungal drugs. • **Candida auris is a species of fungus known for causing severe infections, particularly in hospitalized patients with underlying medical conditions**.
Gout	• Gout occurs due to the **build-up of uric acid crystals in the joints. Uric acid is a waste product found in the blood.** • It is created when the body breaks down substances known as purines, found in certain foods and drinks.
Perseid meteor	• The Perseid meteor shower is named after the constellation Perseus, from which the **meteors appear to emanate**. It is also one of the most plentiful showers with **nearly 100 meteors seen per hour.** • This celestial event occurs annually around mid-August, peaking between the night of August 11 and the **early hours of August 12 this year and they often generate fireballs.** • The Perseids are known for their brightness and speed, often leaving behind trails of light and color as they streak through the sky.
Silicosis	• Silicosis is a type of **pulmonary fibrosis, a lung disease caused by breathing** in tiny bits of silica, a common mineral found in sand, quartz and many other types of rock. • Silicosis mainly affects workers exposed to silica dust in jobs such as construction and mining. **There is no cure for silicosis, and it can be fatal (lead to death).** • Silicosis is commonly found in states such as **Gujarat, Rajasthan, Puducherry, Haryana, Uttar Pradesh, Bihar, Chhattisgarh, Jharkhand, Odisha, and West Bengal.**
Collision Avoidance System (CAS)	• A Collision Avoidance System (CAS) is an **integrated suite of technologies** that helps vehicles avoid collisions with other vehicles or obstacles. • The **system works by using data from various sensors** and communication devices to detect potential hazards and initiate preventive actions like braking or steering adjustments. • **For example,** a CAS device fit on a train will be designed to help that train avoid colliding with another train.
Parvovirus	• Parvovirus infection, commonly known as **'slapped-cheek disease,'** is a highly contagious and common illness in kids. • 'Slapped-cheek' refers to the distinctive facial rash associated with the condition. • Parvovirus infection is sometimes called **the 'fifth disease'**.There is **no specific antiviral treatment for Parvovirus B1.**
National Geoscience Awards-2023	• The National Geoscience Awards (NGA) are among the most prestigious recognitions in the field of geosciences in India. • **Instituted by the Ministry of Mines in 1966**, these awards aim to

	acknowledge and honor outstanding contributions and achievements in various geoscientific fields. • **Eligibility**: Any citizen of India with significant contribution in any field of geosciences is eligible for the award.
Hayflick limit	• The Hayflick Limit, discovered by **Dr. Leonard Hayflick in the 1960s**, is a fundamental concept in cellular biology that explains why human cells can **only divide 40 to 60 times before entering a state of senescence.** • This phenomenon, where cells stop dividing but remain metabolically active, has implications for **aging, cancer, and potential life extension.**
National Space Day	• India is celebrating its maiden National Space Day [NSpD-2024] on August 23, 2024 with the theme **"Touching Lives while Touching the Moon: India's Space Saga."**
Quantum nonlocality	• Quantum nonlocality was first brought into focus through the famous **Einstein-Podolsky-Rosen (EPR) paradox in 1935.** • **Einstein and his colleagues** argued that quantum mechanics was incomplete, proposing that particles had predetermined states (hidden variables) not accounted for in quantum theory.

7.6 ADDITIONAL TOPICS FOR READING FROM IASGYAN WEBSITE

Topics	Date
Captagon	17th August
Californium	17th August
Flaviviruses	19th August
Crew Dragon	28th August
RHUMI 1	28th August
NMR Portal	28th August
Polaris dawn	28th August
Eastern Equine Encephalitis (EEE) virus	29th August
Quasar J0529-4351	29th August
Elephant Endotheliotropic Herpesvirus (EEHV)	30th August
Leptospirosis	30th August
Finternet	3rd September
Nano-MIND Technology	1St August
Axiom 4 mission	4th August
Alzeihmer's new blood test	5th August
Non-GM herbicide-tolerance technology	5th August
Dark patterns	7th August
Sucralose	7th August
Bluetongue disease	8th August
Eta Carinae	8th August
Pathogen Prioritisation Report	10th August
Teng Technology	10th August
Drug Resistant Tb	13th August

Neowise	13th August
PHE of International Concern	17th August
How an asteroid from beyond Jupiter ended the age of dinosaurs	17th August
Biosurfactants	17th August
Need for a central protection act for doctors	20thAugust
Water on Mars	20th August
JUICE Mission	21st August
Time standard for the moon	22nd August
Heaviest antimatter particle	23rd August
Magma ocean on the moon	23rd August
Plant genome editing tools	23rd August
Findings from Chandrayaan 3 mission	24th August
India's ongoing space missions	24th August
BioE3	26th August
Vigyan Dhara	26th August
India's space sector	26th August
India's first quantum computer	27th August
A1 and A2 milk	29th August
Humanoids	30th August
Piezoelectric polymer	3rd September
Solar paraboloid technology	3rd September
Chipmaking in India	3rd September

8. CULTURE & HISTORY

8.1 ERI SILK

Context

- The North Eastern Handicrafts and Handlooms Development Corporation (NEHHDC) under the Ministry of Development of North Eastern Region (DoNER), Govt. of India, has successfully obtained the prestigious Oeko-Tex certification for its Eri Silk, directly from Germany.

Details

Eri Silk

- **Origin**: Eri silk is native to the northeastern states of India, particularly Assam and Meghalaya.
- **Etymology**: The name "Eri" comes from the Assamese word "era," meaning "castor," as the silkworms feed on the castor plant.
- **Sustainability**: Known as "Ahimsa" or "peace" silk, Eri silk is cruelty-free, harvested after the silkworms naturally exit their cocoons.
- **Silkworm Species**: Eri silk is produced from the **Samia ricini** silkworm.
- Eri silk is used to make a variety of garments, from shawls to sarees.
- **Furnishings**: It is also used in home furnishings due to its soft texture and durability.
- **Artisanal Products**: Increasingly popular in sustainable fashion and artisanal markets.

Oeko-Tex Certification

- Oeko-Tex is an international certification system designed to ensure that textiles and leather products are tested for harmful substances and produced in environmentally and socially responsible ways.
- The certification is highly respected in the textile industry, providing a reliable and standardized method for assessing product safety.

Types of Oeko-Tex Certifications

- **Standard 100 by Oeko-Tex:** Focuses on testing textiles at all stages of production for harmful substances. It is one of the most widely recognized certifications.
- **Made in Green by Oeko-Tex:** Ensures that the product is not only safe from harmful substances but also produced in environmentally friendly and socially responsible conditions.
- **Leather Standard by Oeko-Tex:** Specifically for leather products, ensuring they meet similar safety standards.
- **STeP by Oeko-Tex:** Certification for sustainable textile and leather production, covering the entire production process.
- **ECO Passport by Oeko-Tex:** A certification for chemicals, dyes, and auxiliaries used in the textile production process, ensuring they meet safety and environmental standards.

Silk

- Silk is a natural protein fiber produced by certain insect larvae, notably the mulberry silkworm (*Bombyx mori*), during the formation of cocoons.
- The shimmering appearance of silk fabric is due to its triangular prism-like structure, which refracts light at different angles, creating a lustrous and luxurious look.

Historical Background

- Silk production, known as sericulture, has its origins in China, dating back to around 2696 BC.
- For centuries, China held a monopoly on silk production, keeping the process a closely guarded secret.

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- The Byzantine Empire eventually acquired the knowledge in the 6th century AD, and silk production spread across Europe and Asia.
- Today, more than 60 countries produce silk, with China, India, and Brazil being the largest producers.

Types of Silk

- **Mulberry Silk**: The most common type, known for its strength, softness, and smooth texture.
- **Eri Silk**: Also known as 'peace silk' because it does not require killing the silkworms. It is heavier and more durable than mulberry silk.
- **Tussar Silk**: Produced from wild silkworms, mostly found in India. It has a natural golden color.
- **Muga Silk**: Exclusive to Assam in India, this silk is known for its natural golden hue and durability.
- **Spider Silk**: Extremely rare and expensive, spider silk is known for its remarkable strength, but it's not widely used due to the challenges of production.

Silk Production Process

- **Cultivation of Silkworms**: Silkworms are cultivated and fed on specific leaves (e.g., mulberry leaves for *Bombyx mori*).
- **Spinning of Cocoons**: The silkworms spin cocoons made of raw silk filaments.
- **Extraction**: The cocoons are soaked in hot water to soften the sericin (gum) that holds the cocoon together, allowing the silk filaments to be unwound.
- **Weaving**: The silk threads are spun and woven into fabric.

Global and Indian Silk Industry

- **Global Production**: China is the largest producer and exporter of silk, followed by India, Brazil, Uzbekistan, and Thailand. Silk is used globally in fashion, home décor, and industrial applications.

INDIA'S SILK SECTOR

- India is the second-largest producer of silk in the world, contributing around 20% to the global production.
- The history of silk in India dates back to ancient times, with evidence of silk production found in the Indus Valley Civilization.
- Silk was traditionally used for royal and religious purposes, and it continues to hold cultural significance, especially in traditional Indian garments like sarees and dhotis.

Types of Silk in India

- **Mulberry Silk:** The most common and commercially important variety, accounting for about 70% of India's silk production. Karnataka is the leading producer.
- **Tussar Silk:** Known for its rich texture and natural gold color, Tussar is mainly produced in Jharkhand, Bihar, Odisha, and Chhattisgarh.
- **Eri Silk:** Also known as "peace silk" because it does not involve killing the silkworms. Assam is the primary producer of Eri silk.
- **Muga Silk:** Exclusive to Assam, Muga silk is known for its natural golden hue and durability. It is a symbol of Assamese culture and tradition.

Economic Significance

- **Employment:** Provides livelihoods to over 9 million people, including farmers, reelers, and weavers.
- **Exports:** India is one of the largest exporters of silk and silk products, including sarees, garments, and home textiles. Major export markets include the United States, the European Union, and the Middle East.

- **Value Chain:** The silk value chain includes sericulture farmers, reeling units, weaving units, and garment manufacturers, with significant contributions from women and marginalized communities.

Government Initiatives

- **Central Silk Board (CSB):** The apex body for the development of the silk industry in India. It provides research, training, and financial assistance to sericulturists.
- **Silk Samagra Yojana:** A comprehensive scheme aimed at improving the productivity and quality of silk.
- **Integrated Scheme for the Development of Silk Industry (ISDSI):** Focuses on expanding mulberry cultivation, improving infrastructure, and enhancing the skills of workers in the silk sector.

Challenges

- **High Production Costs:** The cost of raw materials and labor is high, making Indian silk less competitive in the global market.
- **Pest and Disease Management:** Sericulture is vulnerable to pests and diseases, which can significantly impact production.
- **Technological Gaps:** Traditional methods are still prevalent, leading to lower productivity and quality compared to modern techniques.
- **Environmental Concerns**: The silk industry, particularly in regions like Karnataka, faces issues related to water scarcity and soil degradation.

8.2 NATIONAL HANDLOOM DAY 2024

Context

- Prime Minister Shri Narendra Modi on 7 August wished the people on occasion of National Handloom Day.

Details

- The handloom sector in India holds significant cultural and economic importance. It is **one of the largest unorganized economic activities and a major source of livelihood, especially in rural and semi-rural areas**.
- The sector is rich with a variety of weaving traditions that reflect India's cultural diversity.

Historical Significance

- Handloom weaving in India **dates back to the Indus Valley Civilization and has been an integral part of Indian culture and heritage.**
- Each region has developed its unique style, such as Patola from Gujarat, Jamdani from Uttar Pradesh, and Pochampally from Telangana.
- These handloom products are known for their intricate designs, vibrant colors, and use of natural fibers like cotton, silk, and wool.

Economic Significance

- **Employment Generation:** The handloom sector is the second-largest employment generator in India after agriculture, providing jobs to over three million artisans, including a substantial percentage from marginalized communities like SC, ST, and OBC.
- **Export Driver:** Indian handloom products are in demand globally, especially in developed countries and the Middle East. The sector's exports have consistently exceeded USD 300 million annually.

- **Sustainability:** Handloom products are eco-friendly, made from organic materials, and involve minimal use of power, making them a sustainable choice.

Key Statistics

- **Total Handloom Workers**: Approximately 35.22 lakh
- **Total Women Handloom Workers**: Approximately 25.46 lakh (72.29% of total)
- **Major Handloom States**: Assam, West Bengal, Manipur, Uttar Pradesh
- **Urban vs Rural**: Majority (90%) of handloom workers are in rural areas
- **Education Levels**: 25% of weavers have not received any formal education
- **Economic Contribution**: Exports of handloom products stood at US$ 266.88 million in FY22

Export Trends

- **Major Products**: Mats and mattings, carpets, rugs, bedsheets, and cushion covers.
- **Export Centers**: Key centers include Karur, Panipat, Varanasi, and Kannur.
- **Export Figures**: In 2022-23, India's export of handloom products like mats and mattings constituted 12.40% of the total handloom exports.

Challenges

- **Market Demand:** There is a lack of consistent market demand, which affects the income and sustainability of handloom weavers.
- **Access to Capital**: Many weavers struggle with limited access to credit and capital, which hampers their ability to invest in quality raw materials and modernize their production processes.
- **Competition from Powerlooms:** The handloom sector faces stiff competition from powerloom and mill-made textiles, which are often cheaper and produced in larger quantities.

Celebrating Handloom Heritage

- **National Handloom Day**, observed on August 7, commemorates the Swadeshi Movement's launch in 1905, which played a crucial role in reviving the Indian handloom industry during the independence struggle.
- The day highlights the contributions of the handloom sector to India's heritage and the importance of supporting weavers.
- In 2024, National Handloom Day was marked by a special event, "Virasat," showcasing handloom products from various regions, workshops on natural dyes, design, and export, and cultural activities.

Schemes for the Handloom Sector in India

Scheme/Initiative	Description	Key Features	Target Group	Funding/Support
National Handloom Development Programme (NHDP)	Facilitates the sustainable development of handloom weavers.	Need-based assistance, product development, infrastructure support.	Handloom weavers and clusters	Government grants and technical support
Comprehensive Handloom Cluster Development Scheme (CHCDS)	Builds mega handloom clusters with at least 10,000 looms each.	Development plans, technology advancement, marketing complexes, dye houses.	Handloom clusters in select regions	Up to Rs. 30 crores per cluster

Handloom Weavers' Comprehensive Welfare Scheme (HWCWS)	Provides social security and welfare benefits to handloom weavers.	Insurance coverage (life, accidental, disability), financial assistance for education.	Handloom weavers and their families	Various insurance schemes (PMJJBY, PMSBY, MGBBY)
Weavers Mudra Scheme	Supports the credit needs of the handloom sector.	Credit at 6% interest rate, margin money support, credit guarantee.	Handloom weavers	Margin money up to Rs. 10,000, 3-year credit guarantee
Yarn Supply Scheme (YSS)	Ensures availability of yarn at Mill Gate Price.	Freight reimbursement, 10% price subsidy on hank yarn for cotton, silk, wool, and linen.	Handloom weavers	Subsidized yarn through National Handloom Development Corporation
Handloom Marketing Assistance (HMA)	Promotes marketing of handloom products.	Development of domestic and export marketing channels, linkage between markets.	Handloom weavers and cooperatives	Financial assistance for marketing initiatives
Pradhan Mantri Credit Scheme for Powerloom Weavers	Facilitates credit access for powerloom weavers.	Credit at subsidized interest rates, margin money assistance.	Powerloom weavers	Margin money subsidy, interest subsidy
Export Promotion Scheme	Enhances the export potential of handloom products.	Assistance for participation in international fairs, exhibitions, and buyer-seller meets.	Handloom exporters	Financial assistance for participation and travel
Design and Technology Upgradation Scheme	Improves design and technological capabilities of handloom sector.	Support for modern looms, CAD/CAM systems, design workshops.	Handloom weavers and clusters	Financial support for technology and design upgrades
Bunkar Mitra Helpline	Provides assistance and information to handloom weavers.	Toll-free helpline for queries related to schemes, benefits, and grievances.	Handloom weavers and workers	Operational support from Ministry of Textiles
Mega Handloom Cluster Scheme	Focuses on holistic development of major handloom clusters.	Interventions like infrastructure development, skill upgradation, and marketing support.	Handloom clusters	Significant funding based on cluster needs
Handloom Reservation Act	Protects handloom weavers from competition from	Reservation of certain textile items exclusively for	Handloom weavers	Legal protection and enforcement

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	powerlooms and mill sector.	production by handlooms.		
Research & Development Scheme	Promotes research in the handloom sector for innovation and development.	Funding for research projects, collaboration with textile research associations.	Research institutions and handloom organizations	Financial grants for approved research projects
Handloom Award Schemes	Recognizes outstanding contributions and promotes excellence in the handloom sector.	National Awards, Sant Kabir Awards, and other recognition for exemplary work.	Individual weavers, cooperatives, and organizations	Awards and cash prizes
PM-MITRA (Mega Integrated Textile Region and Apparel) Scheme	Aims to create world-class infrastructure for the textile industry.	Development of 7 Mega Textile Parks over 3 years, enabling infrastructure, skill development, and manufacturing.	Textile sector including handloom	Government investment up to Rs. 4,445 crore
SAMARTH (Scheme for Capacity Building in Textile Sector)	Enhances skills of the handloom workers.	Training programmes, skill development initiatives, employment linkages.	Textile workers including handloom weavers	Financial and technical support for training initiatives

Fourth All India Handloom Census (2019-2020)

Category	*Statistics*
Total Number of Female Weavers	72.3% of the total weavers
Handloom Cloth Production (2018-2019)	1,619 million square meters
Average Annual Income	₹43,727
Top States by Number of Weavers	Assam, West Bengal, Manipur, Tamil Nadu, Andhra Pradesh

8.3 JHUMUR DANCE

Context

- The Assam government is gearing up for a grand Jhumur dance performance featuring 8,000 tea tribe artists this November.

Details

About

- Jhumur, also known as Jhumair, is a traditional folk dance performed by the tea tribe communities of Assam and parts of West Bengal, Jharkhand, Bihar, Odisha, and Chhattisgarh.
- Primarily performed during the harvest season and festivals like Karam Puja and Tushu Puja.
- **Ritualistic Roles**: Performed as a form of ritual worship, prayer for rainfall, or during courtship and lovemaking.
- **Social Functions**:
  - Serves as a medium to express the joys, struggles, aspirations, and everyday life of the community.
  - Acts as a form of recreation, providing a break from the tedious agricultural work.

Performance and Movements

- **Participants**:
  - Primarily young girls who perform the dance.
  - Male members accompany them by providing music and vocals.
- **Choreography**:
  - Girls hold each other's waists and move their hands and legs in a synchronized manner, creating a visually harmonious and cohesive performance.
  - The dance steps involve forward and backward movements, symbolizing unity and interconnectedness within the community.
- **Musical Accompaniment**:
  - Traditional instruments like the *Madal* (drum), *Dhol*, *Flute*, *Shehnai*, and *Taal* (cymbals) are used.
  - The music complements the dance, adding rhythm and melody to the performance.
- **Attire**:
  - Female dancers wear white sarees with red borders, representing traditional and regional aesthetics.
  - Male performers wear long traditional kurtas and handle the musical instruments.

Ancient Origins

- Jhumur is an ancient dance form, with evidence suggesting its existence in Mesolithic cave paintings.
- The dance's historical roots underline its cultural continuity and significance as a living tradition.

Art Forms of Assam

Art Form	Description	Regions Prominent
Dance Forms		
Sattriya	A classical dance form introduced by the Vaishnava saint SrimantaSankardeva, it is performed in monasteries (Satras) and involves mythological storytelling through dance and drama.	Majuli, Nagaon
Bihu	Performed during the Bihu festival, this dance celebrates the Assamese New Year. It is characterized by brisk dance steps and rapid hand movements, symbolizing the spirit of Assamese culture.	Entire state
Jhumur	Traditional dance of the Tea tribes, performed by young girls and boys to the rhythm of traditional musical instruments.	Tea gardens, Upper Assam
Bhortal	Developed by NarahariBurhaBhakat, this dance involves synchronized movements and the use of cymbals to create colorful patterns.	Barpeta
Theatre and Drama		
Ankia Naat	One-act plays written in Brajavali (a mix of Assamese and Maithili), focusing on Krishna, often accompanied by music and dance.	Majuli
Handicrafts		
Cane and Bamboo	Utilized for making various household items, furniture, and traditional articles like Jappi (traditional sunshade).	Entire state
Woodcraft	Carving of intricate designs on wood for making household items, decorative panels, and traditional articles.	Entire state
Pottery	Includes earthenware and terracotta items made by the Kumar and Hira	Asarikandi,

	communities, with Asarikandi known for its distinctive terracotta style.	Dhubri
Metal Crafts	Brass and bell metal crafts used to create utensils, religious items, and traditional artifacts like Xorai and Bota.	Hajo, Sarthebari
Masks	Used in traditional performances and made from materials like bamboo, wood, and terracotta.	Entire state
Textiles		
Handloom Weaving	Famous for its silks, especially Muga (golden silk), Eri, and Paat. Traditional garments include Mekhela Chador and Gamosa, with Sualkuchi being the main center of silk production.	Sualkuchi
Painting Styles		
Sattriya Style	Developed in the Vaishnavite monasteries, using natural colors and depicting religious themes.	Satras of Assam
Court Style	Developed during the Ahom rule, depicting secular themes and court life, often using professional artisans from various parts of India.	Eastern Assam

Dance Forms in India

State/Union Territory	Dance Forms
Andhra Pradesh	Kuchipudi, Vilasini Natyam, Kolattam, Dhimsa
Arunachal Pradesh	Aji Lamu, Roppi, Phoning
Assam	Bihu, Sattriya, Bagurumba, Jhumur, Ali Ai Ligang
Bihar	Jat-Jatin, Kajari, Jhijhiya, Bidesia, Jhumari
Chhattisgarh	Panthi, Raut Nacha, Gaur Maria, Karma, Damkach
Goa	Dekhni, Fugdi, Dhalo, Mando
Gujarat	Garba, Dandiya Raas, Tippani, Padhar, Bhavai
Haryana	Jhumar, Phag, Dhamal, Loor, Gugga, Khoria
Himachal Pradesh	Nati, Dangi, Chham, Lahauli, Namgen, Hikat
Jammu and Kashmir	Rouf, BhandPather, Dumhal, Kud
Jharkhand	Chhau, Jhumair, Phagua, Karma
Karnataka	Yakshagana, DolluKunitha, Krishna Parijatha, BhoothaAradhane, Nagamandala, Karaga
Kerala	Kathakali, Mohiniyattam, Thiruvathirakali, Theyyam, Kaikottikali, Ottamthullal
Madhya Pradesh	Tertali, Gaur Maria, Kaksar, Ahiri, Karma, Matki
Maharashtra	Lavani, Koli, Tamasha, DhangariGaja, Pavri
Manipur	Manipuri, Thang Ta, Lai Haraoba, PungCholom
Meghalaya	Nongkrem, Shad Suk Mynsiem, Laho, Khuallam
Mizoram	Cheraw, Khuallam, Chheihlam, Solakia
Nagaland	Changlo-Sua lua, Zeliang, Kuki, Naga, Rangma, Aoling
Odisha	Odissi, Gotipua, Ghumura, Mahari, Chhau, Ruk Mar
Punjab	Bhangra, Gidda, Jhumar, Luddi, Kikli, Sammi
Rajasthan	Ghoomar, Kalbelia, Bhavai, Chari, Kathputli, Teratali
Sikkim	Singhi Cham, Khukuri, Chutkey, Maruni
Tamil Nadu	Bharatanatyam, Karakattam, Mayilattam, Kavadi, PoikkalKudirai, Kummi, Kolattam

Telangana	Perini Shivatandavam, Lambadi, Bonalu
Tripura	Hojagiri, Garia, LebangBoomani, Mamita
Uttar Pradesh	Kathak, Raslila, Nautanki, Charkula
Uttarakhand	Chholiya, Jhora, Chhapeli, BaradaNati, Tandi
West Bengal	Rabindra Nritya, Gaudiya Nritya, Chhau, Kathi, Gambhira, TusuParab, Dhali
Andaman and Nicobar Islands	Nicobarese Dance, Andamanese Dance
Chandigarh	Giddha, Bhangra, Jhumar
Dadra and Nagar Haveli and Daman and Diu	Tarpa Dance, Dhol Dance
Lakshadweep	Lava Dance, Kolkali, Parichakali
Delhi	Kathak, Bhagra, Gidda
Puducherry	Bharatanatyam, Garadi, Kollattam

8.4 SHORT ARTICLES

Vattezhuthu

Context

- Members of the Virarajendran Archaeological and Historical Research Centre have discovered a Vattezhuthu (ancient Tamil script) and eight Tamil inscriptions from the 1,00-year-old Thalikiswarar temple at Kovilpalayam near Koduvai in Tirupur district.

Details

About

- Vattezhuthu, **meaning "rounded script," is an ancient script that evolved from Tamil-Brahmi**.
- It is notable for its distinctive rounded characters, which differentiate it from other South Indian scripts.
- The script's name may derive from various roots, including "Vatte" (round) and "eluttu" (letter) or "Vata" (northern), signifying its northern origins
- Notable inscriptions include those from the 7th century in the Vaigai river bed, the 8th century in Tiruttangal, and Jain sculptures with Vattezhuthu inscriptions in Thirupparankunram.

Historical Development

- Vattezhuthu began to develop around the 4th or 5th century CE, with the earliest examples found in memorial stone inscriptions from that period.
- It gained prominence by the 6th century CE, particularly in Tamil Nadu and parts of Sri Lanka.
- By the 7th to 8th centuries, Vattezhuthu had become a distinct script, separate from its Tamil-Brahmi origins.

Geographical Spread and Usage

- The script was primarily used in the **southern districts of Tamil Nadu and the northern regions of Kerala.**
- It is sometimes referred to as **"Tekkan Malayalam" or "Nanamona" in these areas**.
- Inscriptions in Vattezhuthu have been found on pottery, memorial stones, and donative inscriptions, indicating its widespread use across various media.

Evolution and Decline

- As Tamil and Malayalam evolved, so did their writing systems.
- By the 11th century, the Pallava-Grantha script began to replace Vattezhuthu in Tamil Nadu.
- In Kerala, Vattezhuthu continued to be used until the 17th century, when it gradually gave way to scripts like Koleluttu and Malayanma.

- **The modern Malayalam script, derived from the Pallava-Grantha script, eventually supplanted Vattezhuthu.**

Major Scripts Used in India

Script	Region	Associated Languages	Characteristics
Devanagari	Northern & Central India	Hindi, Marathi, Sanskrit, Nepali, Konkani	Brahmi-derived; written left-to-right; used in multiple languages
Bengali	Eastern India	Bengali, Assamese	Brahmi-derived; used in Bengal and Assam
Gurmukhi	Punjab	Punjabi	Developed by Guru Angad; derived from Sharada script
Gujarati	Western India	Gujarati, Kutchi	Similar to Devanagari but distinct in character formation
Odia	Eastern India	Odia	Brahmi-derived; has rounded characters
Tamil	Southern India	Tamil	Dravidian; distinct from other Brahmi-derived scripts
Telugu	Southern India	Telugu	Dravidian; known for its rounded characters
Kannada	Southern India	Kannada	Dravidian; shares similarities with Telugu
Malayalam	Southern India	Malayalam	Evolved from Grantha; rounded and flowing script
Grantha	Southern India	Sanskrit (in Tamil Nadu and Kerala)	Used to write classical Sanskrit texts
Kharosthi	Ancient Gandhara	Gandhari Prakrit, Sanskrit	Right-to-left script; similar to Brahmi
Brahmi	Ancient India	Various ancient languages	One of the oldest scripts; progenitor of many Indian scripts
Sharada	Kashmir	Kashmiri, Sanskrit	An abugida from the Brahmic family; limited use today
Modi	Western India	Marathi	Used for administrative purposes in Maharashtra
Nandinagari	Southern India	Sanskrit	Brahmi-derived; used in ancient manuscripts
Vatteluttu	Southern India	Old Tamil	Predecessor of modern Tamil; derived from Tamil-Brahmi
Tigalari	Southern India	Kannada, Tulu	Used mainly in Tulu Nadu region; shares traits with Grantha
Indus Script	Indus Valley	Undeciphered	Earliest known script of the Indian subcontinent

Martial Arts

Context

- During his **Bharat Jodo Nyay Yatra**, Leader of Opposition practiced Jiu-Jitsu daily, emphasizing its non-violent aspects and introducing young participants to the values of martial arts as tools for building a compassionate and safer society.

Details

Jiu-Jitsu

- Jiu-Jitsu, also known as Jujutsu, is a Japanese martial art that dates back to the late 16th century.

- It **was developed by the samurai, Japan's warrior class, to defend themselves in situations where they lost their weapons during battle.**
- It focuses on grappling, using an opponent's energy against them rather than relying on brute strength.
- Techniques include pins, joint locks, and throws designed to neutralize an opponent without striking.
- **Modern Forms**:
  - Judo
  - Brazilian Jiu-Jitsu.
  - Mixed Martial Arts (MMA).

Aikido

- Aikido was **developed in the early 20th century by MoriheiUeshiba**.
- It is one of the youngest martial arts from Japan and is an offshoot of Jiu-Jitsu.
- Unlike most martial arts, Aikido **focuses on deflecting an attacker's force and controlling the situation without causing harm.**
- It involves joint locks, throws, and redirection of an opponent's energy to neutralize an attack.
- Aikido is **known for its emphasis on non-violence and self-discipline.**

Martial Arts in India

- Kalaripayattu (Kerala)
- Silambam (Tamil Nadu)
- Thang-Ta and Sarit Sarak (NE)
- Gatka (Punjab)
- MustiYuddha (Varanasi)
- Pari-Khanda (Bihar)
- KuttuVarisai (South India)

Prominent martial arts from around the world

Martial Art	Country of Origin
Karate	Japan
Judo	Japan
Kung Fu	China
Taekwondo	Korea
Muay Thai	Thailand
Krav Maga	Israel
Boxing	Global
Capoeira	Brazil
Sambo	Russia
Pencak Silat	Indonesia/Malaysia
Savate	France
Wrestling	Global
Eskrima/Arnis	Philippines
Kickboxing	Japan/Thailand/USA

Commemorative Stamps in India

Context

- Recently, the department of Posts released a set of commemorative postage stamps to celebrate the Paris Olympics.

Details

- Commemorative postage stamps in India are issued to honor significant events, prominent personalities, aspects of nature, environmental issues, national and international concerns, and more.
- These stamps are produced in limited quantities and are available only at Philatelic Bureaux and counters or through the Philatelic Deposit Account Scheme.
- These stamps are released by the Department of Posts, Ministry of Communications.

Issuance and Availability

- **Limited Editions**: These stamps are printed in limited quantities, making them unique and collectible.
- **Distribution**: They are available only at specific philatelic outlets and through subscription services.
- **Special Covers**: Events or subjects not deemed significant enough for a commemorative stamp might be honored with special covers, which can include special cancellations and are often produced for specific occasions.

Rules for Issuing Commemorative Postage Stamps

Proposal Submission

- **Eligibility**: Any citizen of India can propose a commemorative stamp.
- **Format**: Proposals must be submitted in a specific format available on the India Post website.

- **Timeline**: Proposals should be submitted at least two years in advance.
- **Review Process**: The Philatelic Advisory Committee (PAC) or its subcommittees review proposals and make recommendations .

Selection Criteria

- **Quantity**: A maximum of 50 issues (100 stamps) are released annually.
- **Personalities**: Stamps on personalities should not exceed 10% of the annual issue program. No stamp will be issued on a living personality. The personalities on whom commemorative postage stamp may be issued should be of national or international importance. Exceptions in this regard will however be considered to be made for personality from the field of Art, Culture and Music.
- **Anniversaries**:
  - Stamps on personalities are typically issued on their birth centenary or significant death anniversaries. Stamps can be issued no sooner than ten years after an individual's death.
  - For institutions or buildings, they must be at least 100 years old to be considered, and should be of national or international importance.
  - Stamps shall be issued only on the apex institution/organization, on its 100th /125th /150th anniversary and not on the branches of any institution or organization.

Design and Approval

- **Design**: The design is determined by the Department of Posts, ensuring it adheres to guidelines and avoids religious symbols.
- **Approval**: Once approved, the design and issue date cannot be changed.
- **Denominations**: Stamp denominations align with domestic and international postal tariffs.

Mandatory Purchase

- Proponents, especially those from institutions or organizations, must purchase a minimum number of stamps upon approval.
- For instance, institutions must purchase at least 1 lakh stamps, and global institutions must make purchases worth 25 lakh rupees.

Classical Languages

Context

- Special centres set up for the promotion of Telugu, Kannada, Malayalam and Odia after they were designated classical languages are demanding autonomy in their functioning in order to better carry out their functions.

Details

- The demand for autonomy stems from the challenges they face under the current administrative setup.
- These centres were established after these languages were granted classical status.
- They operate under the Central Institute of Indian Languages (CIIL) in Mysuru.

CENTRAL INSTITUTE OF INDIAN LANGUAGES

The Central Institute of Indian Languages (CIIL) is an Indian research and teaching institute based in Mysuru, part of the Language Bureau of the Ministry of Education. It was founded on 17 July 1969. The Central Institute of Indian Languages has seven centres:

- Centre for Classical Languages
- Centre for Tribal, Minor, Endangered Languages and Languages Policy
- Centre for Lexicography, Folklore, Literature and Translation Studies
- Centre for Literacy Studies
- Centre for Testing & Evaluation
- Centre for Materials Production, Publications and Sales
- Centre for Information in Indian Languages

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- The Tamil language promotion centre enjoys autonomy.
- Sanskrit promotion is supported directly through dedicated universities funded by the Union Education Ministry.

Classical Languages

India recognizes six languages as "Classical Languages" due to their rich literary heritage and independent traditions. These languages are:

1. **Tamil** (2004)
2. **Sanskrit** (2005)
3. **Kannada** (2008)
4. **Telugu** (2008)
5. **Malayalam** (2013)
6. **Odia** (2014)

Criteria for Classical Language Status

A language is granted classical status based on:

- A history of at least 1500-2000 years.
- The language should have a rich literary tradition not borrowed from another tradition.
- The language must have a considerable body of ancient literature.

70th National Film Awards 2022

Context

- 70th National Film Awards were announced to honour the best of films across the country that were made in the year 2022.

Details

- The National Film Awards in India, established in 1954, are among the most prestigious awards in the Indian film industry.
- Administered by the Directorate of Film Festivals under the Ministry of Information and Broadcasting, they aim to honor the best of Indian cinema annually.

Categories and Awards Structure

- The awards are broadly categorized into **Feature Films**, **Non-Feature Films**, and **Books on Cinema**. Each of these categories is further divided into multiple awards.

Significant Awards

- **Dadasaheb Phalke Award**: Considered the highest honor in Indian cinema, it is awarded for lifetime contribution to the growth and development of Indian cinema.
- **Golden Lotus (Swarna Kamal)**: Presented in several categories like Best Feature Film, Best Non-Feature Film, and Best Direction.
- **Silver Lotus (Rajat Kamal)**: Awarded in categories such as Best Actor, Best Actress, and Best Music Direction, among others.

Recent Winners (70th National Film Awards)

- **Best feature film** award has been given to **Aattam (The Play)** directed by **Anand Ekarshi** and the award for **Best Non-Feature Film** has been bagged by **Ayena (Mirror)**directed by **Siddhant Sarin**.
- Award for **Best Book on Cinema** has been given to **Kishore Kumar: The Ultimate Biography** authored by **Anirudha Bhattacharjee & Parthiv Dhar**.
- **Rishab Shetty** has been awarded the **Best Actor in Leading Role** for his performance in the movie **Kantara** whereas **Nithya Menen** bagged the award for **Best Actress in a Leading Role** for **Thiruchitrambalam**.

Nagarni Spardha

Context

- A village committee holds the annual oxen race event, known as NagarniSpardha, a centuries-old tradition, at the peak of the rainy season.

Details

- NagarniSpardha is an oxen race traditionally held in small farming villages in India.
- This event is deeply rooted in agrarian culture and celebrates the symbiotic relationship between farmers and their livestock.
- The oxen race is not just a competition but also a reflection of the rural lifestyle, emphasizing the strength, speed, and agility of the oxen.
- The racecourse is usually a flat, muddy track, designed to test the oxen's speed and the driver's skill in handling them.

Oxen and bull races held across India

Race Name	Location
Kambala	Karnataka
Jallikattu	Tamil Nadu
Maramadi	Kerala
Pattathone	Maharashtra
Rekla	Tamil Nadu
Cart Racing (Shankar Patta)	Andhra Pradesh
Kailpodh	Karnataka (Kodagu region)

9. GEOGRAPHY & DISASTER MANAGEMENT

9.1 WAYANAD LANDSLIDES

Context

- Over 100 people died, and hundreds are feared trapped after the landslides struck Chooralmala and Mundakkai villages in Wayanad district.

Details

Introduction

- Landslides occur when gravity forces pushing on hill slope material exceed the frictional forces holding the material in place, causing slope failure.

Landslide Occurrence Area

- Due to steep slopes and heavy rainfall most of the landslides occur in the **northwest Himalayas followed by the northeast Himalayas and the Western Ghats.**
- Approximately **0.42 million sq. km (12.6% of land area),** excluding snow covered area, is prone to landslide hazard in India.

Types of landslides

- **Topples:** This occurs due to fracture in rocks. It causes tilting for gravitational pull without collapsing.
- **Falls:** This involves the collapse of rocks or debris from a cliff or slope. It results in the collection of debris at the base of a hill.
- **Spread:** It occurs in gentle slopes where soft debris or other materials are widely available.
- **Slides:** It occurs when debris, rocks or soil slide through a slope.

Causes of Landslides

Landslides have three major causes: **geology, morphology, and human activity.**

- **Geology:** The earth or rock might be weak or fractured, or different layers may have different strength and stiffness.
- **Morphology:** A classic morphological cause of landslides is erosion, or weakening of earth due to water.
- **Tectonic or volcanic uplift.**
- **Human activity**, such as agriculture, construction, Irrigation, deforestation, excavation.

Impact

- **Immediate impact: Loss and damage to property, loss of lives**.
- **Long term impact:** Increase in the **sediment load of the river** which can lead to floods, Reduce the **effective life of hydroelectric and multipurpose projects**, Loss of **cultivable land and infrastructure**, Environmental impact in terms of **erosion and soil loss, Demographic impact** in terms of relocation of population towards other areas.

Challenges in prediction

- Landslides are largely controlled by highly **localized factors,** hence, gathering information and monitoring the possibilities of landslide is so difficult and cost-intensive.
- **Mapping these materials in three dimensions** is currently impossible with **existing technology**.

Initiatives

- **National Landslide Susceptibility Mapping (NLSM)Programme, Landslide Risk Mitigation Scheme, National Disaster Management Plan of 2016, National Landslide Risk Management Strategy released by National Disaster Management Authority (NDMA), Landslide Hazard Zonation**, **Landslide Atlas of India**.
- **IIT Delhi** created the first hi-resolution **Indian Landslide Susceptibility Map (ILSM).**

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National Disaster Management Authority (NDMA) guidelines for the Management of Landslides

- **Hazard mapping**, **Early warning systems**, **Land-use planning**, **Slope stabilization through** retaining walls or afforestation.

Land slide in Wayanad

Reason:

- **Anthropogenic activity**: Quarrying, hill levelling for construction, extensive road building, expansion in hilly areas, and mono-crop farming, extensive tourism infrastructure due to its proximity to the Meenmutti Waterfalls.
- **Soil piping:** This hydraulic process creates large air-filled voids in the subsurface, often associated with landslides and collapse subsidence. The recent landslides exhibit all the characteristics of soil piping.
- **Peak monsoon** and **Climate change**.

Way Forward

- Kerala must come up with a governmental policy, need to **relocate and rehabilitate** people from such areas, **Micro-level landslide hazard mapping statewide** must be urgently taken up.
- Urgent need for Kerala to establish clear **land management and water utilisation policies**.
- The state needs to have **zoning regulations for land use**, including "**landslide susceptibility data".**

9.2 PALM TREES AND LIGHTNING

Context

- In July, the Odisha government approved a proposal to plant 19 lakh palm trees to ward against the problem of deaths due to lightning strikes.

Details

What is lightning?

- Lightning is a giant spark of electricity in the **atmosphere between clouds, the air, or the ground.**
- **Formation**: Lightning can occur between opposite charges within the thunderstorm cloud (**Intra Cloud Lightning**) or between opposite charges in the cloud and on the ground (**Cloud-To-Ground Lightning**).
- **Types of lightning: Cloud-to-cloud lightning** is the most frequently occurring type of lightning. In these the lightning strike travels either within the cloud, or from one cloud to another cloud.
- In **cloud-to-ground lightning**, the lightning strike extends downward to the ground, or trees, buildings, or other objects on Earth's surface.
- **Benefit from lightning:** Maintain the **earth-atmosphere electrical balance**, **ozone-production**, **fix nitrogen.**

Lightning as a Disaster

- **Lightning-prone states:** Most vulnerable states are Madhya Pradesh followed by **Chhatisgarh, Maharashtra, Odisha and West Bengal**. Other states with high strike rate include **Bihar, UP, Karnataka, Jharkhand and Tamil Nadu**.
- **Fatalities:** According to National Crime Records Bureau (NCRB), these strikes accounts for **35.8 per cent of the deaths.** The majority of **victims (96%) are from rural areas**, including **farmers, cattle grazers, fishermen, jungle hunters and labourers** working outdoors.
- **Economic and Environmental impacts**: Forest fires, **power outages, damage to buildings and structures**.
- **Lightning and climate change Recent finding**: **1 degree C rise** in temperature increases lightning 12 times. Annual Lightning Report

2020-2021 shows 34% rise in lightning. States like Punjab **331%, West Bengal 100%.**

Mitigation

- **Consideration as a natural disaster in India**: States have recently demanded lightning to be considered a natural disaster.
- **Early warning system**.
- **Damini Lightning Alert application, Meghdoot :** Farmers Mobile App.
- **State specific Disaster**: Odisha declared lightning a "**state-specific disaster**" on April 1, 2015.
- **Lightning Resilient India Campaign**, **30-30' rule awareness**, **Palm trees plantation initiative by Odisha**.

Case of Odisha

- A total of **3,790 people** have lost their lives to lightning strikes in the last 11 years.

Concern in Odisha:

- Odisha is particularly susceptible because of its complex combination of **climatic factors which influence the occurrence of lightning including pre-monsoon and monsoon period, cyclonic activities influenced by sea temperature and the convective energy of the atmosphere.**

Odisha's population are at risk:

- As per study **96% of lightning strikes in rural areas**, farmers and daily wage earners like agricultural labourers bear the brunt of lighting. Over **80% of the Odisha population depends on agriculture** and **other allied activities**.

Palm tree initiative of Odisha

- Suited to be lightning **conductors** because of their height among other trees.
- They contain high **moisture and sap**, can absorb lightning.
- The state has banned the felling of existing palm trees and **19 lakh palm trees** will initially be planted on the boundaries of the forests.

Limitations of the initiative:

- A palm tree needs at least **15 to 20 years to attain a height of 20 feet**. These trees could **catch fire after lightning strikes.**

Way Forward

- Pursue with **Government to notify lightning as disaster**.
- Launch **National lightning Risk Management Programme**.
- **Impact based innovative Early warning to community** up to last man.
- Conduct of **Lightning Safety training programs** for community.
- Awareness of the **do's and don'ts around a lightning strike.**
- Ensure **Lightning risk audit as a culture**.
- Install **lightning protection device in maximum infrastructures, temples** etc.
- **Adopt Climate Change grass root level adaptation.**

9.3 SUPER BLUE MOON

Context

- The rare supermoon blue moon, also known as the 'Sturgeon Moon' appeared on August 19, 2024.

Details

What is a blue moon?

- As the cycle of the phases of the moon lasts approximately one month, **we typically experience 12 full moons each year.**
- Many cultures have given distinct names to each month's full moon. **12 months, 12 full moons, 12 names.**

- The moon phases actually **take 29.5 days to complete** which means it takes just 354 days to complete 12 lunar cycles.
- So every 2.5 years or so a **13th full moon is observed within a calendar year.**
- **This 13th full moon doesn't conform to the normal naming** scheme and is referred to as the **Blue Moon.**

How often do Blue Moons occur?

- Blue Moon happens approximately **every two to three years**.
- Since there are about 29.5 days between full moons, February will never have a monthly Blue Moon, as it only has **28 days in a common year and 29 in a leap year**.
- Occasionally, February may have no full moon at all, a phenomenon known as a **Black Moon**, according to Time and Date.

What is a super moon?

- The term '**supermoon**' was first coined by astronomer **Richard Nolle in 1979.**
- The orbit of the moon around the earth is not circular; it is **elliptical,** that is, an elongated or stretched-out circle.
- The farthest point in this ellipse is called the **apogee** and is about 253,000 miles (405,500 kilometers) from Earth on average.
- Its closest point is the **perigee**, which is an average distance of about 226,000 miles (363,300 kilometers) from Earth.
- When a full moon appears at perigee it is slightly brighter and larger than a regular full moon – and that's where we get a **"supermoon".**
- **A super moon (at perigee) is about 14% larger and 30% brighter than a "micro moon" (at apogee).**

What is Super blue moon and Why is this rare and significant?

- A super blue moon combines a **supermoon and a blue moon.**
- Blending the rarity of a **supermoon with the uncommon blue moon phenomenon about once every 10 to 20 years.**
- The next chance to catch this rare combination will be in January and March 2037, making August 2024 a particularly special treat for stargazers.

9.4 WATERSPOUT

Context

- At least one man died and six people are missing after a luxury yacht sank was hit by a violent storm off the coast of Sicily, Italy.

Details

What are waterspouts?

- A waterspout is a column of **cloud-filled** wind rotating over a body of water.

Size and Duration of occurrence

- The average spout is around **50 meters (165 feet)** in diameter, with wind speeds of **80 kilometers per hour (50 miles per hour),** corresponding to the weakest types of tornadoes on land.
- The largest waterspouts can have diameters of **100 meters (330 feet).**
- last for up to one hour, though the average lifetime is just five to **10 minutes**..

What are the types of waterspouts?

- There are two types of waterspouts: **Tornadic waterspouts and Fair-weather waterspouts**.

Tornadic waterspouts

- Tornadic waterspouts get their start as **true tornadoes**.
- Influenced by winds associated with severe thunderstorms, **air rises and rotates on a vertical axis**.
- Tornadic waterspouts are the most powerful and **destructive type of waterspout**.

Fair-weather waterspouts

- Fair-weather waterspouts, however, are much more common.
- The clouds from which they descend are **not fast-moving**, so fair-weather waterspouts are often **static.**
- Fair-weather waterspouts are associated with developing storm systems, **but not storms themselves.**
- Fair-weather waterspouts are **rarely dangerous**.

Mechanism and regions of formation

- Both tornadic and fair-weather waterspouts require high levels of humidity and a relatively warm water temperature compared to the overlying air.
- Waterspouts are most common in tropical and subtropical warm **tropical ocean waters** also form **over large lakes.**
- Regions like: the Florida Keys, the islands of Greece, and off the east coast of Australia.

There are five stages of waterspout formation:

1. **Dark spot:** The surface of the water takes on a dark appearance where the vortex, or column of rotating wind, reaches it.
2. **Spiral pattern:** Light and dark bands spiral out from the dark spot.
3. **Spray ring:** A swirling ring of sea spray called a cascade forms around the dark spot. It appears to have an eye at the center, similar to that seen in a hurricane.
4. **Mature vortex:** The waterspout is now at its most intense stage, visible from the surface of the water to the clouds overhead. It appears to have a hollow funnel and may be surrounded by vapor.
5. **Decay:** When the flow of warm air into the vortex weakens, the waterspout collapses.

Does the water spout contain water from the ocean?

- Despite its name, a waterspout is not filled with water from the **ocean or lake.**
- A waterspout descends from a **cumulus cloud.**
- It does **not "spout" from the water.**
- The water inside a waterspout is formed by condensation in the cloud.

Is the frequency of waterspouts increasing in recent years?

- Due to increase in ocean surface temperature, the frequency of waterspouts is increasing.

9.5 DHANGAR COMMUNITY

Context

- A large group of Dhangars recently marched to the office of the subdivisional officer in Khamgaon of Maharashtra's Buldhana district, demanding a "grazing corridor" for their sheep and goats.

Details

What is the Dhangar community?

- The Dhangars are a community of shepherds with populations in several states.

Distribution

- Besides Maharashtra, they live in Gujarat, Karnataka, and Andhra Pradesh, as well, and are known by other names such as Golla and Kuruba elsewhere.

Population

- The community is believed to be around 1 crore strong, which would make them about 9% of the state's **11.2 crore population (2011 census).**

Legal Status

- The **Dhangars are on Maharashtra's list** of **Vimukta Jati and Nomadic Tribes (VJNT)**, but have been demanding Scheduled Tribe (ST) status for decades.

- According to Dhangar leaders, the community is identified as "**Dhangad"** elsewhere in the country, and **gets reservation as an ST.**

Livelihood and culture

- Dhangars have herded their animals along specific routes since time immemorial.
- **Around 40% of the Dhangar population** is believed to be solely dependent on herding.
- In recent decades, however, as the forest department has started marking out protected forests, the movements of the community have come to be seen as encroachment on forest lands.
- The forest department has erected walls along the routes and we are looked at as encroachers.
- The community follows the rains, and are normally on the road for the better part of the year.
- "They take certain routes — in **Vidarbha they travel from Buldhana to Amravati to Akola, while some go till Chandrapur. In Western Maharashtra they go till Konkan and come back.**
- These routes are both the economic lifeline and a cultural heritage for the community.

Political Representation

- The community has a significant presence in Western Maharashtra and in pockets in Vidarbha, and is seen to have the potential to influence election results in four of the state's 48 Lok Sabha seats, and about 30-35 of the 288 Assembly seats.

The Demand and Challenges

- The community's demand for grazing rights is linked to its demand for ST status.
- But there is no development towards granting status due to opposition from the STs in Maharashtra who fear dilution of their quota benefits if they are shared among a larger population.

How the ST status will help the community?

- The **Forest Rights Act, 2006,** allows traditional occupations including grazing, but it has helped only STs get access to grazing grounds.
- Dhangars, who come under the nomadic tribes category, have not benefited.

9.6 HIGH-RISK GLACIAL LAKES

Context

- Two teams of experts have been sent to six high-risk glacial lakes in Arunachal Pradesh for the first time to assess the possibility of glacial lake outburst floods (GLOF).

Details

What are Glacial lakes?

- A glacial lake is a body of water with origins from glacier activity. They are formed when a glacier erodes the land and then melts, filling the depression created by the glacier.

Formation

- Most glacial lakes form when a glacier retreats and **meltwater fills the hole left behind**.
- Natural dams, formed out of ice and terminal moraines, can also form glacial lakes.
- Dams formed by moraines can be dense and stable, **holding sizable lakes behind them for years**.

How they become a risk?

- **Prolonged melting** or abrupt bursts of intense melting can wreak havoc. **Too much meltwater** in a short period of time might

overflow a lake or burst through natural barriers.

GLOF (Glacial Lake Outburst Flood)

- A GLOF is a flood resulting from the sudden and rapid release of water from a glacial lake, often caused by the failure of a moraine dam or ice dam.
- **Triggering Mechanism:** This can be caused by factors such as glacial melt **water, avalanches, or volcanic activity, earthquake.**
- **Geographical Distribution:** Commonly associated with glacial regions, especially in mountainous areas with significant glacial activity. Examples include the Himalayas, Andes, and Alps.In India- **Western Himalayas and Eastern Himalayas**.
- **Risk Factors:** Climate change-induced glacial melt, seismic activity, and changes in glacial morphology are key risk factors for GLOFs.
- **Human Induced formation of high risk glacial lakes: Influence by global warming**. As warming continues, threats may triple by 2050, with more hot spots emerging farther west.
- **Impacts:** Downstream flooding, destruction of infrastructure, and loss of life.
- **Examples of GLOFs: Chamoli floods, Uttarakhand (2021), In 2023 October, South Lhonak Lake in Sikkim** overflowed and inundated several parts of the Northeastern.
- **Steps taken by India to prevent GLOFs: Sendai Framework (2015-2030), Coalition for Disaster Resilient Infrastructure**, being monitored via satellite, **Aapda Mitra scheme**, **National Glacial Lake Outburst Floods Risk Mitigation Programme**.
- **Challenges in program implementation:** Fully assessing their impact is only possible with site visits, which is difficult owing to inhospitable terrain.
- **Mitigation Strategies:** Risk assessment and Hazard mapping, Establishment of ground-based monitoring stations, engages local communities, establishment of early warning systems, Artificial drainage.

9.7 MASS WASTING

Context

- A new study on the high frequency of mass wasting events in the Sedongpu Gully of the Tibetan Plateau since 2017 could be bad signs for India, specifically the country's Northeast..

Details

- Mass wasting, also known as mass movement, refers to the movement of rock or soil down slopes under the force of gravity.

Mass movements mechanism

- These movements transfer the mass of rock debris down the slopes under the direct influence of gravity.
- The movements of mass may range from **slow to rapid, affecting shallow to deep columns of materials and include creep, flow, slide and fall.**
- **Gravity exerts** its force on all matter, both bedrock and the products of weathering.
- Mass movements are aided by gravity and no geomorphic agent like **running water, glaciers, wind, waves and currents participate in the process of mass movements.**
- Weak unconsolidated materials, **thinly bedded rocks, faults, steeply dipping beds, vertical cliffs** or steep slopes, **abundant precipitation and torrential rains and scarcity of vegetation etc.**, favour mass movements.

Several activating causes precede mass movements

- **Passive Causes:** Weak or unconsolidated debris, alternating weak and strong lithologies, Faults or other structures that weaken the rock, Steep slopes or cliffs, Frequent temperature swings, freezing and

thawing, or heavy rainfall, Lack of vegetation increases susceptibility.

- **Activating Causes: Undercutting of Slopes, Increased Overburden, Increased Soil Moisture, Earthquakes**.

Slow Movements

- **Creep:** Creep is one type under this category which can **occur on moderately steep, soil covered slopes.**
- **Solifluction**: Also included in this group is **solifluction** which involves slow downslope flowing soil mass or fine grained rock debris saturated or lubricated with water.

Rapid Movements

- These movements are mostly prevalent in humid climatic **regions and occur over gentle to steep slopes.** When slopes are steeper, even the bedrock especially of soft **sedimentary rocks** like shale or deeply weathered igneous rock may slide downslope.
- **Mudflow:** In the **absence of vegetation** cover and with heavy rainfall, thick layers of weathered materials get saturated with water and either slowly or rapidly flow down along definite channels. Mudflows occur frequently on the slopes of erupting or recently erupted volcanoes.
- **Avalanche:** A third type is the debris avalanche, which is more characteristic of **humid regions with or without vegetation cover and occurs in narrow tracks on steep slopes.**
- **Mitigation methods include Afforestation, Construction of Barriers, Catchment Dams, Improved Drainage, Slope Stabilization**.

9.8 PM 2.5 POLLUTION

Context

- Favourable meteorological conditions contributed to a dip in particulate pollution (PM2.5) in India between 2021 and 2022, thus adding one year to India's average life expectancy, according to a new study.

Details

Key Findings

- **Favourable meteorological conditions**, such as **above-normal rainfall**, contributed to a dip in **particulate pollution (PM2.5)** in India between 2021 and 2022, thus adding **one year to India's average life expectancy.**
- The **highest declines in particulate pollution in 2022** were observed in **the Purulia and Bankura** districts in West Bengal and the **Dhanbad district in Jharkhand**.
- Particulate pollution takes **3.6 years off the life of the average Indian resident**.

Particulate matter

- PM stands for particulate matter (**also called particle pollution**): the term for a **mixture of solid particles and liquid droplets found in the air.**
- **Particle pollution includes:**
  - **PM_{10}**: with diameters 10 micrometers and smaller.
  - **$PM_{2.5}$** : with diameters 2.5 micrometers and smaller.

Sources of PM

- PM may be either directly emitted from sources **(primary particles)** or formed in the atmosphere through chemical reactions of gases **(secondary particles)** such as **sulfur dioxide (SO2),nitrogen oxides (NOX), and certain organic compounds.**
- These organic compounds can be emitted by both **natural sources**, such as **trees and vegetation**, as well as from **man-made (anthropogenic)** sources, such as **industrial processes** and **motor vehicle exhaust.**

Harmful Effects of PM

Health impact

- Respiratory problems, Cardiovascular effects, Lung cancer, Reduced life expectancy, Aggravation of pre-existing conditions, Reduced lung growth in children.

Environment impact

- Reduce **visibility**, **ambient PM has both climate warming and cooling properties**.
- The **metal and organic compounds** in PM have the greatest potential to alter **plant growth and yield.**

Steps taken for improvement of air quality

- **National Clean Air Programme**, **City Action Plans (CAPs).**
- Convergence of resources from various schemes of Central Government such as **Swachh Bharat Mission SBM (Urban), Atal Mission for Rejuvenation and Urban Transformation (AMRUT), Smart City Mission, Sustainable Alternative towards Affordable Transportation (SATAT), Faster Adoption and Manufacturing of Hybrid and Electric Vehicles (FAME-II), Nagar Van Yojna.**
- **Sustainable Alternative Towards Affordable Transportation (SATAT).**
- Ban on use of **pet coke and furnace oil as fuel** in NCR States since 2017.
- **Establishment of Paddy straw based pelletization and Torrefaction plants to control stubble burning.**
- **National Air Quality Index (AQI)** was launched in 2015.

9.9 SHORT ARTICLES

The Disaster Management (Amendment) Bill, 2024

Context

- Bill to create Urban Disaster Management Authority introduced in Lok Sabha.

Details

Key Features of Bill

- **A disaster database at both national and state levels to improve data management and analysis.**
- It empowers National Disaster Management Authority (NDMA) and State Disaster Management Authority (SDMA) to prepare the disaster plan at national level and state level instead of National Executive Committee and State Executive Committee.
- Proposes the formation of an **"Urban Disaster Management Authority"** for state capitals.
- Periodic Risk Assessment.
- **Statutory status for National Crisis Management Committee** and **the High-Level Committee.**
- The creation of State Disaster Response Forces.
- It allowing the Central and State govt. to impose penalties for actions that hinder disaster management efforts, with fines not exceeding ₹10,000.

Advantages

- Step toward enhancing nation's **capacity for disaster risk reduction and environmental sustainability.**
- A comprehensive, **centralised disaster database at both national and state levels** will significantly improve ability **to prepare for, respond to, and recover from disasters.**
- The creation of this disaster database will facilitate **more efficient resource allocation, better coordination among stakeholders, and timely, informed decision-making during crises.**

Criticism

- **Excessive rule-making powers to the Central government.**
- Questions were raised regarding the **constitutional basis for the Bill**, as disaster management is not explicitly mentioned in the subjects of the **Concurrent List.**
- The Bill suffers from the malady of **excessive delegation.**

- The creation of multiple authorities could lead to **confusion and at the time of natural disasters**, this will create bureaucratic hurdles.

International Day of the World's Indigenous Peoples 2024

Context

- The International Day of the World's Indigenous Peoples, also known as World Tribal Day, is observed on August 9 every year.

Details

- The International Day of the World's Indigenous Peoples takes place annually on 9 August to celebrate Indigenous Peoples and their knowledge.
- **Theme for the year 2024:** 'Protecting the Rights of Indigenous Peoples in Voluntary Isolation and Initial Contact'.

Historical background

- In December 1992, the General Assembly of the United Nations declared 1993 to be the **International Year of the World's Indigenous Peoples.**
- The UN General Assembly (UNGA) decided, in its **resolution 49/214,** to observe the International **Day of the World's Indigenous People annually, on 9 August** representing the first meeting, in 1982, of the UN Working Group on Indigenous Populations.
- The UN General Assembly founded the **first International Decade of the World's Indigenous Peoples from 1995 to 2004.**
- **A Second International Decade was declared from 2005-2015, concentrating on "A Decade for Action and Dignity".**

Significance of the date

- The significance of World Tribal Day lies in its **focus on raising awareness about the diverse cultures and traditions of indigenous peoples**, many of whom face systemic **marginalisation and loss of traditional lands.**
- The day provides an **opportunity for individuals and communities** to engage in discussions about the preservation of **indigenous languages, customs, and practices, and to promote policies that protect their rights.**

Ashoka Seamount, Chandragupta Ridge and Kalpataru Ridge

Context

- Three underwater geographical structures located in the Indian Ocean have been awarded names proposed by India.

Details

The discovery

- **Kalpataruridge (430 sq km) and Ashok seamount (180 sqkm):** With the help of the Russian Sea vessel **Akademik Nikolay Strakhov** that the Indian research team discovered both the structures in 2012.
- **Chandragupt ridge (675 sq km):Discovered in 2020** by the Indian ocean **research vessel MGS Sagar**. It is an elongated and oval shaped body.

Recent naming

- Names of **Ashoka Seamount, Chandragupta Ridge and Kalpataru Ridge** in the Indian Ocean have been approved by International Hydrographic Organization (IHO) and UNESCO's Intergovernmental Oceanographic Commission (IOC).
- These structures are l**ocated along Southwest Indian Ridge.**
- They were discovered by **National Centre for Polar and Ocean Research.**

Other structures bearing Indian names

- **The Raman ridge** (accepted in 1992): Discovered in 1951 by a US oil vessel. It was named after Physicist and Nobel Laureate **Sir CV Raman**.
- **The Panikkar Seamount** (accepted in 1993): In 1992 it was discovered by India research vessel Sagar Kanya. It is named after NK Panikkar, a renowned oceanographer.
- **Sagar Kanya seamount** (accepted in 1991): For its successful 22nd cruise in 1986 leading to its discovery, a seamount was named after the research vessel itself.

- **DN Wadia Guyot:** Geologist DN Wadia was honoured when an underwater volcanic mountain, known as guyot, was named after him in 1993 following its discovery in 1992 by **Sagar Kanya.**

Naming of Undersea Feature

Outside Territorial Sea:

- **Individuals and agencies can propose** names for unnamed features, following **International Hydrographic Organization (IHO) 's 2013 guidelines that is** B6 (Standardization Of Undersea Feature Names, 2013)**.**
- **Prior to the naming of a feature**, its **character, extent, and position shall have been established sufficiently for identification. Positions should be given as geographic coordinates.**
- Proposals are **reviewed by IHO Sub-Committee on Undersea Feature Names (SCUFN).**

Within National Territorial Sea:

- National authorities approving names of features **should regularly publicize their decisions**.
- National authorities naming features within their territorial sea should conform to the principles and procedures stated in B6 (Standardization Of Undersea Feature Names, 2013).

Japan's Megaquake Advisory

Context

- A 7.1 earthquake in southern Japan led to a warning from the Meteorological Agency about possible major quakes.

Details

What is megaquake?

- Earthquakes with a **magnitude larger than 8 are considered megaquakes.**

What is the new risk of a megaquake?

- The Japan Meteorological Agency (JMA) implemented a warning system following the **events of 2011,** aiming to avert future catastrophes of similar magnitude, recently, the agency utilized this system for **the first time**.
- **Nankai Trough quake advisory panel** predicted the chance of a bigger earthquake striking after a magnitude 7 tremor was once in a few hundred cases, relatively higher than regular times.
- Japan estimates the next **Nankai Trough megaquake** could be as powerful **as magnitude 9.1.**

Japan's vulnerability to earthquakes

- Japan is one of the world's most earthquake-prone nations sitting on the Pacific **"Ring of Fire"** arc of volcanoes and oceanic trenches.
- The **potential damage from Nankai Trough Quake** and Tsunami.

What is the Nankai Trough and why is it significant for quakes?

- The Nankai Trough is off its southwest Pacific coast and runs for approximately 900 km (600 miles), where the **Philippine Sea Plate** is **sub ducting under** the **Eurasian Plate** and the accumulating tectonic strains could result in a **megaquake roughly once in 100 to 150 years**.

Ballast water

Context

- The Tamil Nadu Water Resources Department (WRD) has charged that Kamarajar Port is the main reason for the spread of the invasive species by not regulating the ballast water from ships.

Details

What is Ballast water?

- Ballast is a heavy substance, such as rocks or water, placed in such a way as to improve **stability and control to a ship when it unloads its cargo.**
- Prior to the 1880s, ships used **solid ballast materials** such **as rocks and sand**, which people had to shovel into and out of cargo holds.

Water as a ballast substance

- When ships need ballast, **water is easily pumped into ballast tanks** from the sea or the

inland waters where the ship is located, which adds weight to the bottom and sides of the vessel.

- Ballast water is pumped out into the ocean when it is **no longer needed (when the weight of the ship needs to be lightened) – for example, when the ship is taking on cargo.**
- Ballast tanks are an integral **part of a ship's design** with their number and size varying according to the vessel's type and construction.
- Ships can have a range of ballast capabilities and capacities, but generally ballast equates **to 25% to 30% of the weight the ship can carry – including cargo, fuel, crew, passengers, food, and water – or its dead weight tonnage.**

Why is ballast water an issue?

Spread of threatening Invasive Alien Species

- Loading and unloading untreated ballast water can pose a major threat to the **environment, public health and the economy as ships become a carrier for the transfer and spread of threatening invasive aquatic species, from one part of the world's oceans to another.**
- When ballast water is pumped into a **ship, sediment and microscopic organisms** are also transferred into the ballast tanks.
- These organisms include **bacteria, microbes, small invertebrates, eggs, cysts, and larvae of various species.**

Ballast Water Management Convention (BWM)

- **BWM Convention of the International Maritime Organization (IMO**) came into force in 2017 to help prevent the spread of potentially harmful aquatic organisms and pathogens in ships' ballast water.
- **From September 8, 2017,** ships must manage their ballast water so that aquatic organisms and pathogens are removed or rendered harmless before the ballast water is released in a new location.
- Recently constructed ships with functioning ballast water management systems continuously take a small portion of the ballast water and dose it with chemicals to free it from **biological organism before the water is pumped out.**

Solar Cycle

Context

- Indian Institute of Astrophysics astronomers find new method to predict amplitude of upcoming solar cycle.

Details

What Is the Solar Cycle?

- The solar cycle is the cycle that the Sun's magnetic field goes through approximately every 11 years.

How it works?

- Sun is a huge ball of **electrically-charged hot gas.**
- This charged gas **moves, generating a powerful magnetic field.**
- Every 11 years or so, the Sun's magnetic field completely flips. This means that the **Sun's north and south poles switch places.**
- Then it takes about another 11 years for the **Sun's north and south poles** to flip back again.

Effect on Solar Activity

- As the **magnetic fields change**, so does the amount of **activity on the Sun's surface.**
- The solar cycle affects activity on the surface of the Sun, such as sunspots which are caused by the Sun's magnetic fields.

Solar minimum and solar maximum activity

- The beginning of a solar cycle is a **solar minimum**, or when the Sun has the **least sunspots.**
- Over time, solar activity—and the number of sunspots—increases.
- The middle of the solar cycle is the **solar maximum**, or when the Sun has the most sunspots.
- As the cycle ends, it fades back to the **solar minimum and then a new cycle begins**.

Other activity

- Giant eruptions on the Sun, such as solar flares and **coronal mass ejections, also increase during the solar cycle.**
- These **eruptions send powerful bursts of energy and material into space**.

Tracking of Solar Cycle

- One way to track the solar cycle is by **counting the number of sunspots.**
- Some cycles have maximums with **lots of sunspots and activity.**
- Other cycles can have very **few sunspots and little activity**.

Effect

- Times of maximum sunspot activity are associated with **a very slight increase** in the energy output **from the sun.**
- **Ultraviolet radiation** increases **dramatically during high sunspot activity**, which can have a large effect on the **Earth's atmosphere.**

Krishi-Decision Support System (Krishi-DSS)

Context

- MoS Shri Bhagirath Choudhary launches the digital geo-spatial platform, Krishi-Decision Support System.

Details

Name of the platform

- Krishi-Decision Support System (Krishi-DSS).

Type

- **Geo-spatial platform**.

Developed by

- Jointly by the **Ministry of Agriculture and the Department of Space**.

Objective

- To support **comprehensive agricultural management**.

Key features

- **Crop mapping and monitoring:** understand cropping patterns by analysing parcel-level crop maps over the different years.
- Helps in understanding crop rotation practices and promotes sustainable agriculture by encouraging the cultivation of diverse crops.
- **Drought monitoring:** Real-time information on various indicators i.e soil moisture, water storages, crop condition, dry spells.
- **Field parcel segmentation:** Help in understanding each parcels unique needs, cropping patterns for targeted interventions.
- **One nation-one soil information system:** Soil type, soil pH, soil health.
- **Data library of Krishi-DSS:** Ground truth data and spectral libraries for different crops to the researchers and industry.
- Helps in **flood impact assessment** to **Crop insurance solutions**.
- Early disaster warning like Pest attack, Heavy rain, Hail storm

Shiveluch

Context

- Shiveluch volcano erupts after 7.0 magnitude earthquake strikes off eastern Russian coast.

Details

Name of the volcano

- Shiveluch.

Country

- Russia.

Region

- Kamchatka peninsula.

Geologic history

- Began forming about 60,000 to 70,000 years ago during the **Late Pleistocene.**

Volcanic province

- Eastern Kamchatka Volcanic Arc.
- The Aleutian Island Arc and the Kurile-Kamchatka Arc subduction zones.
- Largely part of Pacific ring of fire as the Pacific Plate crust subducts deeper under the Okhotsk Plate.

Volcanic Type

- Composite and Stratovolcano.

Elevation

- 10,771 ft.

Characteristics

- Its summit is truncated by a broad **9-km-wide caldera**.
- Many **lava domes** dot its outer flanks.

- Largely composed series of overlying thick **basaltic-andesitic lava flows**.
- About 75% of the volume of Shiveluch is constituted by **magnesian andesites with from 53.7-63.8% silicate.**
- Numerous **intrusive dikes around the crater edge**.

Eruption history

- Catastrophic eruptions took place in 1854 and 1964.
- On 27 February 2015, Shiveluch erupted shooting ash into the atmosphere about 9,100 meters (30,000 ft) crossing the Bering Sea and into Alaska.
- A strong eruption occurred on 11 April 2023.
- On 17 August 2024, an eruption of Shiveluch began sending an ash cloud 8 kilometres.

Impact

- Pyroclastic flows extended 15 km and destroyed forest around the **Bekesh River valley** .
- Formation of ash clouds reached heights of up to 12 km.

Earthquake.

Other active volcanoes of Russia.

- Ebeko, Bezymianny.

Diamond deposits in the world

Context

- The second-largest diamond in the world has been uncovered in a mine in Botswana.

Distributions

- **Diamond producing bands:** The Northern band consists of Canada and Russia and the Southern band includes Botswana, South Africa, Namibia, and Australia.
- **Reserves: The world reserves of industrial diamond are about 700 million carats located mainly in Australia (31%), Congo (Kinshasa) (21%), Botswana (19%), South Africa (10%), and Russia (6%).**
- **Producers: The principal producers of diamonds are Russia (31%), Botswana (20%), Congo Dem. Rep. (12%), Canada (10%), Australia & Angola (7% each) and South Africa (6%).**

Other facts

- **Russia has the largest and richest resource for Diamond.** Coming from the Yakutia region in northeastern Siberia.
- **Botswana is the leading diamond-producing country in terms of value and the second largest in terms of volume.**
- **Botswana has seven diamond mines, important ones being, the Damtshaa, the Jwaneng, the Letlhakane, and the Orapa Mines.**
- **The Democratic Republic of Congo (DRC) is Africa's largest diamond producer.** Kasai and Kasaï-Oriental provinces.
- **The DRC is the third-largest diamond-producing country by volume.**
- **Australia is the leading producer of color diamonds.**
- **Australia is famous for its pink, purple and red diamonds, and an important producer of some of the finest yellow diamonds around.**

Recent discovery

- A massive 2,492-carat diamond -- **the second largest in the world** -- has been discovered in Botswanas' **Karowe Diamond Mine**.

Diamond production in India

- Madhya Pradesh is the only state in India that produces diamonds.
- Panna in Madhya Pradesh is famous for diamond mining in India.
- Panna is famous by the name of 'The City of Diamonds'.

Van Allen Radiation Belts

Context

- The Polaris Dawn mission will carry four crew members on a risky journey into the radiation belt.

Details

What are the Van Allen radiation belts?

- The Van Allen radiation belt is a **zone of energetic charged particles**, most of which originate from the **solar wind.**

- The particles are captured by and held around a **planet by that planet's magnetic field.**
- **Discovery:** The **Van Allen radiation belts** were discovered in **1958 by James A. Van Allen.**

Earth's belt

- It surrounds Earth, containing a nearly impenetrable **barrier that prevents the fastest**, most **energetic electrons** from reaching Earth.
- **Two zones encircling the low Earth orbit** in which there are relatively large numbers of high-energy (fast-moving) charged particles.
- The particles are **mainly protons and electrons**, which are trapped within the belts by Earth's magnetic field.
- The **outer belt is made up of billions of high-energy particles** that originate from the Sun and become trapped in Earth's magnetic field, an area known as the magnetosphere.
- The outer radiation belt extends from roughly 9,300 miles (15,000 km) to 15,500 miles (25,000 km) above the earth.
- The **inner belt results from interactions of cosmic rays** with Earth's atmosphere, extends from roughly 600 miles (1,000 km) to 3,700 miles (6,000 km) above the earth.
- **Dangerous for humans:** Higher levels of radiation.

About Polaris Dawn mission

- The two-day mission aims to reach about **700 kilometers above Earth**.
- The crew will **perform the first-ever extravehicular activity (EVA)** by commercial astronauts, using SpaceX-developed EVA suits.
- These studies are designed to advance **human health on Earth and during long-duration spaceflights.**
- The mission will **test Starlink's laser-based communication system** in space.
- Research will focus on understanding the effects of **spaceflight and space radiation on human health.**
- The program also seeks to **raise funds for Saint Jude Children's Research Hospital.**
- **Spacecraft:** A **Falcon 9 rocket** and **Dragon capsule** named **Resilience** for the crew.

Sabina Shoal

Context

- China publishes first survey report of disputed South China Sea's Sabina Shoal China publishes first survey report of disputed South China Sea's Sabina Shoal.

Details

- Sabina Shoal is part of the Spratly Islands in the **South China Sea**.
- Sabina Shoal is an oceanic coral atoll that developed on top of a seamount in the eastern part of the **Spratlys.**
- The lagoon is characterized by numerous small **coral heads and knolls.**
- **Geostrategic Significance:** Sabina Shoal is strategically located approximately **130 nautical miles west of the Philippine island of Palawan and about 35 nautical miles from Second Thomas Shoal.**
- **Economic Significance:** Sabina Shoal is located near **Recto Bank (Reed Bank),** an area that is believed to hold substantial reserves of oil and natural gas.

9.10 ADDITIONAL TOPICS FOR READING FROM IASGYAN WEBSITE

TOPIC NAME	DATE
Seine River	1st August 2024
Bhopal Gas Tragedy	2nd August 2024
Pumped Storage Projects	2nd August 2024
Mozambique	3rd August 2024
Thadou Tribes	6th August 2024

OlDoinyoLengai Volcano	7th August 2024
Standardized Precipitation Index (SPI)	7th August 2024
Beas River	7th August 2024
Porja, Bagata, Goud, and Konda Dora	7th August 2024
Homo Floresiensis	8th August 2024
Sone River	8th August 2024
A23a	12th August 2024
Lake Bolsena	12th August 2024
Kursk	13th August 2024
Tantalum	13th August 2024
Polar Coupled Analysis and Prediction for Services (PCAPS)	14th August 2024
Tungabhadra River	14th August 2024
Lake Turkana	16th August 2024
How to Prepare for Extreme Weather Events	19th August 2024
Mera Peak	19th August 2024
Hikki Pikki Tribe	20th August 2024
Guam Island	20th August 2024
Bhima River	21st August 2024
Teesta Hydel Projects	22nd August 2024
Poland	22nd August 2024
Antarctica Ice Sheet	23rd August 2024
Ladakh	27th August 2024
Tibetan Plateau	28th August 2024
Atacama Salt Flat	28th August 2024
Indigenous Tribes of Andaman and Nicobar Island	28th August 2024
Marshyangdi River	28th August 2024
Weather Forecasting in India	30th August 2024
Typhoon Shanshan	30th August 2024
Wular Lake	30th August 2024