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PRELIMS



POLITY & GOVERNANCE



SANCTION FOR PROSECUTION

Context: The issue of granting **sanction to prosecute a public servant** has resurfaced after the Karnataka Governors approval to open an investigation and to prosecute **Chief Minister Siddaramaiah** over alleged irregularities in allotting compensatory plots to his wife, following the acquisition of her land by the Mysore Urban Development Authority.

Background: -

- The law relating to a Governor granting sanction for a serving CM's prosecution is governed not by statutory provisions alone, but also a string of court judgments.

Why is Sanction Required to Prosecute a Public Servant?

- It has been a mandatory feature of **anti-corruption law**.
- **Protection from Vexatious Prosecution:** It is required to protect them from malicious or vexatious prosecutions for actions taken during official duties.

Legal Provisions:

- **Section 197, CrPC:** No court can take cognisance of a case against a public servant without sanction from an authority competent to remove them. Applies to those currently or formerly public servants. Similar to CrPC, **Prevention of Corruption Act, 1947**, has provision for sanction.
- Under both the CrPC and the Prevention of Corruption Act (PCA), the **State and Central governments had the authority to sanction prosecution of their respective employees**.

Latest Provisions on Granting Sanction

- **Section 218** of the **Bharatiya Nagarik Suraksha Sanhita (BNSS)**, the procedure code that has replaced the CrPC, retains the sanction provisions.

Prevention of Corruption Act (2018 Amendment):

- **Section 17A:** Government approval is required even to begin an investigation.
- **Section 19:** Sanction is a prerequisite for any court to take cognisance of a charge sheet or complaint of corruption.
- **Applies to Current and Former Public Servants:** The amendment covers those who are and were public servants.

Governor's Role in Cases Against a Chief Minister

- **Authority to Grant Sanction:** The **Governor**, who has the power to dismiss a Chief Minister, is considered the authority to grant sanction for prosecuting a Chief Minister.
- **Governor's Discretion:** According to the Supreme Court (A.R. Antulay case), the **Governor should act in his discretion and not on the advice of the Council of Ministers** when granting sanction to prosecute a Chief Minister.

Court Rulings on Sanction

- **Madhya Pradesh Special Police Establishment vs. State of MP and others (2004):** The Supreme Court upheld the Governor's decision to grant sanction against two Ministers despite the Council of Ministers' decision to the contrary. The Court found the Council's decision irrational and emphasized that the Governor can act in his discretion when there is apparent bias or irrationality in the Council's decision.

Source: [Hindu](#)

HIMACHAL PRADESH'S BILL RAISING WOMEN'S MINIMUM MARRIAGE AGE

Context: The Himachal Pradesh Assembly on August 27, passed a Bill raising the minimum marriageable age for women from 18 to 21 years

Background: -

- The Prohibition of Child Marriage (Himachal Pradesh Amendment) Bill, 2024, was passed by voice vote. It seeks to amend the Prohibition of Child Marriage Act, 2006 (2006 Act) to advance gender equality and encourage higher education among women.

Key Provisions:

- **Redefinition of "Child":** Section 2(a) of the 2006 Act defines a "child". The Bill removes this gender-based distinction, redefining a "child" as a male or female who has not completed 21 years of age.
- **Extended Petition Period:** Bill extends the time period for filing a petition to annul a marriage. Under Section 3 of the 2006 Act, an individual who was a minor at the time of marriage can file for annulment within two years of attaining majority — **before turning 20 for women and 23 for men.** The Bill extends this period to five years, allowing both women and men to file petitions before they turn 23.
- **Precedence of the Bill:** A new provision, Section 18A, has been introduced to ensure that the Bill's provisions take precedence over all other existing laws.

Why will the President's Assent Be Required?

- **Concurrent List Conflict:** The Bill deals with marriage, a subject on the Concurrent List, where both central and state governments can legislate.
- **Article 254:** Under Article 254 of the Constitution, if state legislation contradicts central law, it becomes void unless the President's assent is obtained. With the President's assent, the state law will override the central law within Himachal Pradesh.

Expert Opinions:

- **Potential Misuse of Law:** Activists highlight that the existing law is often misused by parents to penalize daughters who marry against their wishes, and **increasing the age to 21** could exacerbate this issue, leading to further persecution of young women.
- It is also likely to endanger the life and liberty of the marginalised communities exposing them to further brutal policing.
- The 2008 Law Commission Report recommended setting a uniform age of marriage for both men and women at 18 years. The **National Human Rights Commission in 2018** too proposed a similar reform.

Source: [The Hindu](#)

JUSTICE VERMA PANEL AND DEATH PENALTY FOR RAPE

Context: After the brutal rape and murder of a doctor on duty at Kolkata's R.G. Kar Medical College and Hospital on August 9, there has been a clamour of voices seeking the death penalty for the accused.

Background: On December 23, 2012 a committee headed by Justice J.S. Verma, former Chief Justice of India, was constituted to recommend changes to the Criminal Law so as to provide for quicker trial and enhanced punishment for criminals accused of sexual assault. It was set up after the gang rape of a paramedic student in Delhi on December 16, 2012 (Nirbhaya).

J.S Verma committee and aftermath

- The committee suggested that the death penalty is not an effective deterrent against serious crimes, but this was not considered.
- The Union Cabinet did not adopt the Justice Verma Committee's recommendation against the death penalty when it cleared the ordinance on sexual assault.

Amendments Introduced:

- **Key amendments in 2013 included the death penalty for:** Rape leading to death or a persistent vegetative state (Section 376A), Repeat offenders (Section 376E).
- In 2018, further changes introduced death as the maximum punishment for every participant in a gang rape when the victim is less than 12 years old (Section 376DB), and life-long imprisonment if the victim is less than 16 (Section 376DA).

Justice Verma Committee's Recommendations:

- **Enhanced Sentences for Rape:** The committee proposed increasing sentences for rape from 7 years to 10 years, 20 years, and life imprisonment, stopping short of recommending the death penalty.
- **Persistent Vegetative State:** For cases causing a persistent vegetative state, the committee recommended rigorous imprisonment of no less than 20 years, or life imprisonment for the remainder of the perpetrator's natural life.
- **Death Penalty as a Myth:** The committee highlighted evidence suggesting that the deterrent effect of the death penalty on serious crimes is a myth. According to the Working Group on Human Rights, the murder rate has declined consistently in India over the last 20 years despite the slowdown in the execution of death sentences since 1980.

Stance on Marital Rape:

- **Removal of Marital Rape Exception:** The committee recommended removing the exception for marital rape, emphasizing that a relationship between the perpetrator and victim should not be a defense against rape.
- **Government's Response:** The Union government did not accept this recommendation and refused to criminalize marital rape. The Bharatiya Nyaya Sanhita retains the exception that sexual acts by a man with his wife (over 18 years old) are not considered rape.

Source: [Hindu](#)

UNIFIED PENSION SCHEME (UPS)

Context: The Indian government recently introduced the Unified Pension Scheme (UPS), which marks a significant shift from the National Pension System (NPS) that was implemented in 2004.

Background: -

- This new scheme aims to balance fiscal responsibility with the need to provide adequate retirement benefits to government employees.

Unified Pension Scheme (UPS)

- It is a new pension policy introduced by the Ministry of Finance with aims to provide enhanced financial security for central government employees.
- The UPS is set to come into effect **from April 1, 2025**.

Key Features:

- **Assured Pension:** Employees with at least 25 years of service will receive a pension equivalent to 50% of their average basic pay over the last 12 months before retirement.
- **Family Pension:** In the event of an employee's death, their family will receive a pension worth 60% of the employee's last drawn pension.
- **Minimum Pension:** There is a guaranteed minimum pension of **₹10,000 per month**.
- **Lump-Sum Payment:** Employees will receive a lump-sum payment at retirement, calculated as 1/10th of their last drawn monthly pay (including DA) for every six months of service completed.
- **Inflation Protection:** Both the assured pension and the family pension will be indexed to inflation, ensuring they rise with the cost of living.

Eligibility:

- **Minimum Service:** Employees must have completed **at least 10 years** of service to be eligible for the pension.
- **Full Benefits:** To receive the full benefits, employees need to have at **least 25 years** of service.

Benefits:

- **Financial Security:** Provides a predictable and stable income post-retirement.
- **Family Support:** Ensures financial support for the family in case of the employee's demise.
- **Inflation Adjustment:** Keeps pace with the cost of living, protecting the purchasing power of retirees.

Difference from National Pension System (NPS):

- **Pension Amount:** UPS guarantees a fixed pension amount (50% of the average basic pay for 25 years of service), whereas NPS is market-linked and does not guarantee a fixed pension.
- **Contributions:** In NPS, contributions are invested in market-linked securities like equities, making the final pension amount dependent on market performance. UPS offers a defined benefit similar to the **Old Pension Scheme (OPS)** but with contributions from both employees and the government.

- **Choice:** Employees can choose between continuing with NPS or switching to UPS, but the choice, once made, is final.

Source: [Livemint](#)

UPSC ADVERTISES LATERAL ENTRY POSTS

Context:The Union Service Public Commission recently sought applications for lateral entry for 45 posts of Joint Secretary, Director and Deputy Secretary across 24 Central ministries.

Background:

- Appointment to the posts will be on a **contract basis for a period of three years**, extendable to five years depending upon performance, and central government employees are not eligible for the posts as per advertisement.

Key takeaways

- Lateral entry into bureaucracy is a **practice that involves recruiting individuals from outside the traditional government service cadres to fill mid and senior-level positions.**
- It was formally **introduced during Prime Minister Narendra Modi's tenure**, with the first set of vacancies announced in 2018.
- **Aim:** address complex governance and policy implementation challenges by tapping into external expertise.
- It was initially recommended by the **Second Administrative Reforms Commission (ARC)** established in 2005 during the **United Progressive Alliance (UPA)** government.
 - The ARC, chaired by Veerappa Moily, advocated for lateral entry to fill roles requiring specialised knowledge unavailable within traditional civil services. These recommendations emphasised recruiting professionals from the private sector, academia and PSUs to improve policy implementation and governance.

Criticism:

- **Lack of Reservation:** One of the primary criticisms is the absence of reservation for Scheduled Castes (SC), Scheduled Tribes (ST), and Other Backward Classes (OBC) in these positions.
- **Ambiguity in Recruitment Process:** There are concerns about the transparency and clarity of the recruitment process. Critics point out that there is no clear policy on determining vacancies, shortlisting candidates, and evaluating their suitability.
- **Political Allegations:** Critics have accused the government of using lateral entry to appoint individuals loyal to specific political ideologies, thereby undermining the neutrality of the civil service.
- **Impact on Career Civil Servants:** Large-scale lateral induction may demotivate existing civil servants who have progressed through the traditional career path. It could potentially discourage talented officers from continuing in the service.

Source: [Indian Express](#)

CENTRAL WATER COMMISSION

Context:The Central Water Commission has launched an updated version of the 'FloodWatch India' app.

Background:

- CWC is responsible for the control, conservation, and utilization of water resources across India.

About Central Water Commission (CWC)

- The CWC is a premier **technical organization in India**, specializing in water resources.
- It presently functions as an attached office of the **Ministry of Jal Shakti, Department of Water Resources, River Development and Ganga Rejuvenation, Government of India**.
- **Formation:** Established in 1945 as the Central Waterways, Irrigation, and Navigation Commission (CWINC) on the advice of Dr. B.R. Ambedkar.
- **Evolution:** It was later merged with the Central Electricity Commission to form the Central Water and Power Commission (CW&PC). In 1974, the water wing became the Central Water Commission (CWC) and the power wing became the Central Electricity Authority (CEA).

Key Functions and Responsibilities

- **Water Resource Planning:** Assists states in water resources planning and development and prepares national water policies and guidelines for water management. It also supports the formulation of water resource projects, including irrigation, hydropower, flood control, and drinking water supply.
- **Design and Consultancy Services:** Provides technical designs for major water resources structures like dams, canals, and barrages.
- **Project Monitoring and Appraisal:** Evaluates and monitors water resources projects and appraises projects submitted by states for central funding.
- **Flood Forecasting and Management:**
 - Operates the national flood forecasting network, providing real-time flood forecasts for major river basins.
 - Supports states in preparing and implementing flood management strategies, including the construction of flood control structures.
- Manages a network of hydrological observation stations across the country to collect data on river flows, sediment transport, and water quality.
- **Inter-State Water Disputes:**
 - Provides technical assistance and data to various tribunals and committees involved in resolving inter-state water disputes.
 - Facilitates negotiations and agreements between states on sharing river waters.
- Conducts research on various aspects of water resources management, including hydrology, dam safety, and river engineering. Collaborates with national and international institutions on water-related research projects.
- Promotes integrated river basin management approaches, considering the holistic development and management of water resources within river basins.

Organizational Structure:

- **Chairman:** The CWC is headed by a Chairman, who holds the status of Ex-Officio Secretary to the Government of India.
- **Wings:** The work is divided into three main wings:
 - Designs and Research (D&R) Wing
 - River Management (RM) Wing

- o Water Planning and Projects (WP&P) Wing

Source: [PIB](#)

JOINT PARLIAMENTARY COMMITTEE (JPC)

Context: The Opposition has demanded a Joint Parliamentary Committee (JPC) to investigate the Hindenburg Research allegations against Sebi chairperson Madhabi Puri Buch.

Background:-

- Citing documents from whistleblowers, Hindenburg claimed that Sebi chief and her husband had made investments, dating back to 2015, in offshore funds in Bermuda and Mauritius linked to entities allegedly used by the Adani Group to manipulate financial markets.

About Joint Parliamentary Committee (JPC)

- **Formation and Composition:**
 - o A JPC is an ad hoc body comprising members from both Houses of Parliament, roughly in proportion to party strengths in Lok Sabha and Rajya Sabha.
 - o Lok Sabha's representation is usually double that of Rajya Sabha.
 - o Acts as a mini Parliament, tasked with scrutinizing specific matters within a specific timeframe.
- Joint committees are **established by a motion passed in one House and agreed to by the other**. Parliament decides on the details of membership and subjects for a JPC.
- **Powers and Functions:**
 - o Can access documents and examine officials from any concerned ministry or institution.
 - o Members can submit dissenting notes if they disagree with the majority.
 - o The government decides whether to act on JPC recommendations. The government may launch investigations on the basis of a JPC report.
 - o Government, in any case, must report on the follow-up action taken based on the committee's recommendations.
 - o Based on the government's action, the JPC submits an 'Action Taken Report' to Parliament, which can be discussed, allowing the Opposition to question the government.
- **Significance for Opposition:**
 - o Provides access to all details of an alleged scam.
 - o Ensures the issue remains in the public eye, creating political pressure on the government.
- **Notable Financial Investigations by JPC:** 2G Spectrum Scam (2013), Share Market Scam (2001), Securities & Banking Transactions (1992):
- **Other Investigations:**
 - o The Bofors scam JPC and the VVIP AgustaWestland chopper scam JPC (2013) were significant, though the latter didn't proceed due to the BJP's non-participation.

Source: [Indian Express](#)

SUBSTANTIVE EQUALITY AND THE QUOTA QUESTION

Context: The Supreme Court's recent verdict on sub-classification of the **Scheduled Caste (SC)** and **Scheduled Tribe (ST)** quota marked a milestone in equality jurisprudence. CJI D.Y. Chandrachud, emphasized substantive equality in the judgment.

Background:

- In a string of rulings given over the last seven years, CJI Chandrachud has referred to substantive equality to stress that reservation is a facet of merit, and not an exception to the merit rule.
- The State of Punjab v. Davinder Singh (2024), the latest judgement allowing sub classification, stands as a testimony to the evolved understanding of judiciary with respect to reservations.

What is substantive equality

- It's a principle in law that goes **beyond formal equality**, which simply means **treating everyone the same**. Instead, substantive equality focuses on **addressing the actual disparities and disadvantages that different individuals or groups face due to their unique circumstances or historical injustices**.
- In essence, while formal equality treats everyone the same, substantive equality seeks to level the playing field by providing support and adjustments based on specific needs and historical contexts.

Supreme Court's view on reservation over the years

1. As Limiting Equality:

- Initially, the Supreme Court took a formal and restrictive approach to reservations, viewing them as exceptions to the principle of equal opportunity.
- In The State of **Madras v. Champakam Dorairajan (1951)**, the Court ruled that reserving seats in educational institutions was unconstitutional, as there was no explicit provision for it, unlike Article 16(4) which allows reservations in public employment.
- This formalistic view persisted in the **Indra Sawhney v. Union of India (1992)** (Mandal judgment), where the Court saw Articles 15(4) and 16(4) as special provisions or in other words, an exception to the principle of equality and imposed a 50% cap on reservations.

2. As a Facet of Equality:

- The Court's decision in **State of Kerala v. N.M. Thomas (1975)** marked a shift towards an expansive and substantive reading of equality, upholding a Kerala law that relaxed qualifying criteria for SC and ST candidates in government jobs, without viewing it as an exception to equality of opportunity.

3. As Limiting Efficiency:

- **Article 335 of the Constitution mandates** that reservations for SCs and STs in services must be consistent with administrative efficiency.
- The Supreme Court's discourse on reservations emphasized maintaining "**efficiency**," often equating merit with efficiency. This view led to rulings against reservations in promotions, as seen in the 1992 Indra Sawhney judgment, where SC held that reservations in promotions would dilute efficiency in administration.
- In 1995, the **Constitution (Seventy-seventh) Amendment Act introduced Article 16(4A)**, allowing "**consequential seniority**," which lets reserved-category candidates retain seniority gained through earlier promotions. This amendment was upheld in 2006, on the ground that the efficiency of administration was only relaxed, not obliterated.

Repudiation of the Reservation-Versus-Merit Binary:

- Chief Justice D.Y. Chandrachud has reframed the quota-versus-efficiency debate through his rulings. He argues that reservations should be seen as embodying substantive equality, rather than as concessions.
- Chandrachud contends that the stereotype linking reservation to inefficiency prevents SC/ST candidates from accessing promotions, which was precisely why reservations were introduced.
- He views constitutional amendments as a repudiation of the binary between reservation and merit.

Source: [Indian Express](#)

PRIVILEGE MOTION

Context: Congress moved a Privilege Motion against Prime Minister for posting on social media a portion of remarks which were expunged from the proceedings of the House by the Chair.

Background:-

- The notice for the motion was moved by Charanjit Singh Channi under rule 222 which gives a member the power, with the consent of the Speaker, to raise a question involving a breach of privilege either of a member or of the House or of a Committee.

What are Parliamentary Privileges?

- They are **special rights, immunities, and exemptions** enjoyed by the members of Parliament. The aim of this is to ensure legislators and house can perform duties effectively .
- In India are divided into **collective and individual privileges**.

Collective privileges

- The Indian Parliament can decide if its reports, debates, and proceedings should be published or not.
- The Parliament has the right to exclude outsiders from its proceedings and can conduct secret sessions if needed.
- The Parliament can make rules for regulating its procedures, business conduct, and work adjudication.
- It can suspend or expel members for violating privileges.
- The Parliament can reprimand, admonish, or even imprison individuals who breach privileges.
- The Parliament is informed about the arrest, detention, conviction, imprisonment, and release of its members.
- The Parliament can initiate inquiries and call witnesses.
- The proceedings of the Parliament and its committees cannot be questioned in court.
- No arrests or legal processes can occur within the House precincts without the presiding officer's permission.

Individual Privileges

- Members of Parliament cannot be arrested during sessions, 40 days before and after sessions. This privilege is only available for civil cases and not in criminal and preventive detention cases.
- They have the freedom of speech in the houses and are immune from court proceedings for their speech in Parliament.
- They are exempt from jury service and can refuse to give evidence or appear as witnesses during

sessions.

What is a Privilege Motion?

- It's moved by a member when they **believe that a minister or another member has breached these privileges**. The motion aims to censure the concerned member or minister for their actions.

Conditions for Raising a Privilege Motion

- To raise a privilege motion, two conditions must be met:
 - Specific Matter of Recent Occurrence: The issue must be a specific incident that has occurred recently.
 - Need for Intervention: The matter should require the intervention of the House.

Process of a Privilege Motion

- **Raising the Motion:** A member submits the motion to the Speaker (Lok Sabha) or Chairman (Rajya Sabha).
- **Initial Examination:** The Speaker/Chairman examines the motion and decides whether to admit or reject it. The Speaker/RS chairperson is the first level of scrutiny of a privilege motion. The Speaker/Chair can decide on the privilege motion himself or herself or refer it to the privileges committee of Parliament.
- **Committee of Privileges:** If the motion is referred to the Committee of Privileges, it investigates the matter.
- **Committee Report:** The committee examines the case, calls relevant persons, reviews documents, and submits a report with recommendations.
- **House Consideration:** The House considers the committee's report and decides on the action to be taken.

Common Causes for Privilege Motions are: Misconduct by Members, Publication of Expunged Remarks, Obstructing Members in the Discharge of their Duties, Disrespectful Conduct etc

Source: [Indian Express](#)

SUB CLASSIFICATION OF SC,ST

Context: In a landmark judgement, a seven-judge Bench of the Supreme Court on August 1 reframed how the Scheduled Castes (SC) and Scheduled Tribes (ST) quota may operate. The Bench headed by Chief Justice of India permitted states to create sub-classifications within the SC and ST categories for the purpose of according wider protections — through sub-quotas — to the most backward communities within these categories.

Background:-

- This overturns the apex court's 2004 decision in *E V Chinniah v State of Andhra Pradesh*, in which it had held that the SC/ST list is a "homogenous group" that cannot be divided or sub-classified further.

Key takeaways

- **Article 341** of the Constitution allows the President, through a notification, to list as SC "castes, races or tribes" that suffered from untouchability. **SC groups are jointly accorded 15% reservation in education and public employment.**
- Over time, some groups within the SC list have been underrepresented compared to others, prompting states to try extending more protections to these groups. These attempts have faced

judicial scrutiny.

- E.V Chinniah judgement: The court held that any attempts to create a differentiation within the SC list would essentially amount to tinkering with it, for which the Constitution did not empower states. **Article 341 only empowers the President to issue such a notification, and Parliament to make additions or deletions to the list. The court also said that sub-classifying SCs violates the right to equality under Article 14.**
- In 2020, Constitution Bench in Davinder Singh v State of Punjab held that the 2004 E V Chinniah decision required reconsideration, noting that SCs are not a homogeneous group and that there are unequals within SC's, ST's, and socially and educationally backward classes. But since this Bench, like in E V Chinniah, comprised five judges, a seven-judge Bench heard the issue in February 2024.

Key issues before the Bench included:

- **1. Are all castes in the SC list to be treated similarly?:** Article 341(1) allows the President to specify SCs in a state. Article 341(2) states that only Parliament can modify this list. E V Chinniah decision held that SCs must be treated identically. However, CJI Chandrachud rejected this, stating that the Presidential list is a "legal fiction" and does not imply uniformity within the SCs.
- **2. Can states 'tinker' with or sub-classify the Presidential list?:** The court, in E V Chinniah, had held that the power under articles 15(4) & 16 (4) was limited to providing quotas in education and public employment and once reservations have been provided to SCs as a whole, it is not open to the State to sub-classify. The majority opinion in the present case held that states in exercise of its power under Articles 15 & 16 can identify varying degrees of social backwardness and provide special provisions, including sub-quotas.
- **3. What is the yardstick for sub-classification?:** States must demonstrate the need for wider protections, provide empirical evidence, and have a reasonable rationale for classifying sub-groups. This reasoning can be tested in court. Representation must be "effective" rather than merely "numerical," and states must prove the disadvantaged status of sub-groups based on quantifiable data.
- **4. Does the creamy layer principle apply to Scheduled Castes?:** Justice Gavai supported introducing the 'creamy layer' principle for SCs, as applied to OBCs.

Source: [Indian Express](#)



INTERNATIONAL RELATIONS



NORTHERN BALD IBIS

Context: After being extinct in Central Europe for 300 years, the northern bald ibis has made a comeback. Now, scientists acting as "foster parents" are guiding the birds to relearn their long-lost migration routes, leading them aboard a tiny plane.

Background: Thirty-six of these **endangered birds** are now following an ultralight aircraft on a 2,800 km journey from Austria to Spain, a trip that could take up to 50 days. During the flight, human foster parents sit at the back of the microlight, waving and shouting encouragement to the birds as they fly.

About Northern Bald Ibis

- The Northern Bald Ibis (*Geronticus eremita*), **also known as the Hermit Ibis or Waldrapp, is an endangered bird species.**

Description

- **Appearance:** The Northern Bald Ibis is a large bird, measuring about 70–80 cm in length with a wingspan of 125–135 cm. It has glossy black plumage with bronze-green and violet iridescence. One of its most distinctive features is its unfeathered red face and head, along with a long, curved red bill.
- **Behavior:** Unlike many other ibises, the Northern Bald Ibis is non-wading and prefers open areas such as grasslands, rocky mountains, and semi-deserts.
- **Habitat and Distribution:** they are widespread across the Middle East, northern Africa, and southern and central Europe. And today, the majority of the remaining wild population is found in southern Morocco, with smaller numbers in Syria and Turkey.
- **Breeding:** The Northern Bald Ibis breeds colonially on coastal or mountain cliff ledges, where it typically lays two to three eggs in a stick nest.

Conservation Status

- **Threats:** The species has faced significant threats from hunting, habitat loss, and slow reproduction rates.
- **Conservation Efforts:** Thanks to international reintroduction programs and natural population growth in Morocco, the Northern Bald Ibis was downlisted from Critically Endangered to Endangered on the IUCN Red List in 2018.

Source: [The Guardian](#)

TWO NEW US-INDIA AGREEMENTS

Context: India and the US have signed a Security of Supply Arrangement (SOSA) and Memorandum of Agreement regarding the Assignment of Liaison Officers.

Background: -

- Defence Minister Rajnath Singh concluded his four-day official visit to US on August 25.

Two new agreements

- **SOSA (Support for One Another):**
 - Under SOSA, the US and India will provide reciprocal priority support to each other for goods and services that promote national defence.
 - It will enable both countries to acquire the industrial resources they need from one another to resolve unanticipated supply chain disruptions to meet national security needs.
 - While SOSA is a significant mechanism for strengthening interoperability with US defense trade partners, it is non-binding.
 - US Department of Defense (DoD) has been working to conclude another agreement with India, the Reciprocal Defence Procurement (RDP) Agreement, which will be binding.
- **MoU on Liaison Officers:**
 - The new MoU on the Assignment of **Liaison Officers builds on a previous decision to enhance information-sharing between India and the US.**
 - This agreement will see Indian armed forces officers posted to key US Commands, starting with the deployment of a Liaison Officer to the US Special Operations Command headquarters in Florida.
- The roadmap for defence industrial cooperation, released last year, anticipated the completion of SOSA and the RDP Agreement.
- Additionally, the US-India initiative on **Critical and Emerging Technology (iCET)**, aims to expand strategic technology partnerships and defense industrial cooperation.
- In 2023, during Prime Minister Modi's official visit to the US, the DoD and Ministry of Defence launched the India-US **Defence Acceleration Ecosystem (INDUS-X)**, to take forward the commitment to build a defence innovation bridge under iCET.

Source: [Indian Express](#)

CONFLICTS IN WEST ASIA : ISRAEL – IRAN

Context: Israeli security forces suspect Iran and Hezbollah's role in the suicide bombing in Tel Aviv on Sunday.

Background:

- Israel believe that the terror attack could be Iran and its proxy's bid to avenge the assassination of Ismail Haniyeh (leader of Hamas) in Tehran last month.
- Iran's opposition to Israel is rooted in religious, ideological, and geopolitical factors, including its support for Palestine and its anti-American stance.

Israel-Iran Conflict Overview

- The formation of Israel in 1948 was a watershed moment in the history of the Middle East. It triggered an Arab-Israeli war and the long Israeli-Arab and Israeli-Palestinian conflicts.
- Iran, although opposed to the formation of Israel and voted against the Partition Plan (1947) and

Israel's admission into the United Nations (1949), was the second Muslim-majority country after Türkiye to recognize Israel in 1950.

- The friendly relations between the two states were not always reflected among the wider population in Iran who were sympathetic to the plight of the Palestinians and their struggle for a state.

The 1979 Islamic Revolution in Iran

- Israel and Iran have been in conflict since the 1979 Islamic Revolution in Iran, which led to a break in diplomatic relations.
- Religious and Ideological Differences:
 - Iran opposes Israel's control over Jerusalem, which is considered holy in Islam.
 - The ideological basis of Iranian opposition to Israel emanates from anti-imperialist and anti-Americanism rooted in the 1979 revolution.
- Geopolitical Tensions:
 - Since the revolution, Iran has called for the expulsion of all external forces from the region and to form a regional security architecture through collaboration among the regional states. Iran, therefore, is considered a revisionist power that wants to replace the US-led regional order with an Iran-led order.

Recent Escalations:

- The Israeli attack on the Iranian diplomatic complex in Syria and killing of IRGC commanders and officers, its constant targeting of Hezbollah commanders in Lebanon and the killing of Haniyeh in Tehran are part of the pattern. Iran, too, is no longer satisfied with showing restraint and issuing verbal threats, as was visible during the 13 April rocket, missile and drone attacks.
- For Iran, the killing of Haniyeh was a serious provocation as it was a direct challenge to Iranian sovereignty and also to its military capacity and deterrence.
- Tehran nonetheless faces the dilemma because any reckless action can lead to an all-out war and might force the US to join Israel, which Iran would like to avoid at this point.

Implications for India

- India, with significant investments in the Middle East, is concerned about potential disruptions in hydrocarbon supplies and the impact on its diplomatic relations in the region. A peaceful Middle East is crucial for India's strategic interests, but ongoing conflicts pose challenges to its diplomatic balancing act.

Source: [Indian Express](https://www.indianexpress.com)

INDIA AUSTRALIA RAPID INNOVATION AND START UP EXPANSION (RISE) ACCELERATOR

Context:The **Atal Innovation Mission (AIM)** and Australia's CSIRO have launched a call for applications for the Climate Smart Agritech cohort of the **India Australia Rapid Innovation and Start-up Expansion (RISE) Accelerator**.

Background:

- The India Australia RISE Accelerator offers tailored support and opportunities for agritech startups and SMEs ready to scale their innovations across borders.

About India Australia Rapid Innovation and Start-up Expansion (RISE) Accelerator

- The RISE Accelerator is a bilateral program launched by the **Atal Innovation Mission (AIM)** and

Australia's Commonwealth Scientific and Industrial Research Organisation (CSIRO).

- It was designed to support start-ups and **small- to medium-sized enterprises (SMEs)** in both India and Australia.
- **RISE Accelerator targets** to enable start-ups with mature tech-based innovations to fast-track their cross-border social, economic and environmental impact through cross-border innovation ecosystem.

The RISE Accelerator aims to:

- **Foster Innovation:** Encourage the development of cutting-edge technologies.
- **Facilitate Cross-Border Collaboration:** Enable start-ups to expand their impact across India and Australia.
- **Address Shared Challenges:** Focus on solutions for environmental and climate issues.

Benefits

- The program provides: **Market Insights, Partnerships, Mentorship and Validation and Adaptation.**
- Participants in the RISE Accelerator can expect:
- **Accelerated Growth, Credibility, Funding Opportunities and Comprehensive Support.**

Source: [PIB](#)

PM NARENDRA MODI'S VISIT TO UKRAINE

Context: Prime Minister Narendra Modi is holding talks with Ukraine's President Volodymyr Zelenskyy in Kyiv.

Background:

- Modi will be the first Indian prime minister to visit Ukraine after diplomatic relations were **established in 1992**. On July 6, **Modi met Russia's President Vladimir Putin in Moscow** — a visit that both Zelenskyy and the United States had criticised.

Shift in India's Policy Toward Ukraine

- Prime Minister Modi's visit signals a significant change in India's traditional foreign policy regarding Ukraine.
- Historically, **India maintained close ties with the Soviet Union during the Cold War**, but this affinity didn't extend to Ukraine post-independence in 1991.
- India's relationship with Ukraine has been lukewarm, similar to its approach to Poland after the Cold War.

Impact of the Russia-Ukraine War

- The **Russia-Ukraine war, which began in February 2022**, strained India-Ukraine relations, with bilateral trade dropping from \$3.39 billion in 2021-22 to around \$0.7 billion in subsequent years.
- Despite maintaining a balanced stance on the conflict, India has used this period to re-engage with Ukraine at the highest levels.

Strengthening Bilateral Relations

- Over the past year, Modi has met with Ukrainian President Zelenskyy at various forums, including the G-7 summit.
- Indian leaders, including External Affairs Minister S. Jaishankar and National Security Advisor Ajit Doval, have maintained regular contact with their Ukrainian counterparts.

- Modi's visit is a part of a broader effort to strengthen ties with Ukraine, with potential opportunities in post-war reconstruction, defence cooperation, and agriculture.

Impact on India-Russia Relations

- Modi's visit is unlikely to negatively impact India-Russia relations, as India's engagement with Ukraine is independent of its ties with Russia.
- India remains a key partner for Russia, helping it navigate Western sanctions and continuing defence cooperation.
- Just as Russia's relationship with China does not undermine its ties with India, India's engagement with Ukraine will not alter its relationship with Russia.

Source: [Indian Express](#)

INDO-PACIFIC ECONOMIC FRAMEWORK (IPEF)

Context: India has been elected as the Vice-Chair of the Supply Chain Council under the Indo-Pacific Economic Framework (IPEF).

Background:

- Alongside the USA, which serves as the Chair, India will play a crucial role in enhancing supply chain resilience across the Indo-Pacific region.

About Indo-Pacific Economic Framework (IPEF)

- The IPEF is a strategic blueprint aimed at **promoting economic integration, connectivity, and cooperation among countries in the Indo-Pacific region.**
- It envisions a comprehensive and inclusive approach to harness the region's economic potential while fostering stability, development, and shared prosperity.
- It was launched by U.S. President Joe Biden on May 23, 2022.

The IPEF has four pillars:

- **Trade:** Enhancing trade relations and facilitating economic exchanges.
- **Supply Chains:** Strengthening supply chain resilience and coordination.
- **Clean Economy:** Promoting sustainable and environmentally friendly practices.
- **Fair Economy:** Fostering fairness, competitiveness, and inclusiveness among member economies.

Source: [News On Air](#)

INDO-PACIFIC PARTNERSHIP FOR MARITIME DOMAIN AWARENESS

Context: The Quad countries recently announced that the Indo-Pacific Partnership for Maritime Domain Awareness (IPMDA) will be extended to the Indian Ocean, utilizing the Indian Navy's Information Fusion Centre in Gurugram.

Background:

- IPMDA is a technology and training initiative to enhance maritime domain awareness in the Indo-Pacific region and to bring increased transparency to its critical waterways.

About Indo-Pacific Partnership for Maritime Domain Awareness (IPMDA)

- The IPMDA is an initiative launched **by the Quadrilateral Security Dialogue (Quad) countries—** Australia, India, Japan, and the United States—in May 2022.
- The primary goal of the IPMDA is to enhance maritime security and domain awareness across the

Indo-Pacific region by leveraging emerging technologies and providing training support to regional partners.

Key Objectives and Features

- **Maritime Security and Awareness:**

- The IPMDA aims to provide near-real-time, integrated, and cost-effective maritime domain awareness to its partners¹. This includes monitoring regional maritime spaces and securing open sea lines of communication (SLOCs).
- It focuses on combating various challenges such as natural disasters, human and weapons trafficking, illegal, unreported, and unregulated (IUU) fishing, and dark shipping (vessels operating with their AIS transponders turned off).

- **Technological Integration:**

- The initiative employs commercial satellite-based tracking services to enhance vessel identification and counter dark shipping. This technology aims to provide a faster, wider, and sharper maritime picture of regional partners' exclusive economic zones.

- **Capacity Building:**

- The IPMDA provides capacity-building measures for regional partners, helping them improve their maritime situational awareness and protect their waters and resources.

- **Inclusivity and Regional Cooperation:**

- While the initiative implicitly aims to curb Chinese belligerence in the region, especially in the South China Sea, it emphasizes inclusivity. The Quad countries aim to reassure other regional states that the IPMDA is not solely focused on deterring China but is meant to be a collaborative effort to enhance overall maritime security

Challenges

- **Perception Issues:** Some regional states are concerned that the initiative is primarily anti-China, which could hinder broader participation.
- **Implementation Hurdles:** Effective implementation requires overcoming data management and information-sharing obstacles, as well as ensuring that smaller allies in the Indo-Pacific are not strained by the initiative.

Source: [Hindustan times](#)

ROHINGYAS IN MYANMAR

Context: At least 150 Rohingyas, including children, were killed in a drone attack while they were trying to flee the violence-hit Myanmar in the western state of Rakhine.

Background:

- Multiple families were waiting to cross the border and enter Bangladesh when a drone strike, allegedly carried out by the Arakan army, killed them at the borders between the two nations in Rakhine.

About Rohingyas

- The Rohingyas are a predominantly Muslim ethnic minority in Myanmar, primarily residing in Rakhine State.

- They have faced severe persecution and discrimination for decades.
- The conflict involving the Rohingya in Myanmar is deeply rooted in a complex mix of historical, political, and social factors.

Some of the causes of issues related to Rohingyas:



- **Historical Tensions:** Tensions between the Rohingya Muslims and the Buddhist majority date back to the start of British rule in 1824. During this period, the British employed a divide-and-rule strategy, favoring Muslims over other groups.

- **Citizenship Issues:** The Rohingya have been denied citizenship by the Myanmar government, which considers them illegal immigrants from Bangladesh. This statelessness has left them without

basic rights and protections.

- **Political Manipulation:** Various political entities in Myanmar have used the Rohingya issue to gain support and consolidate power. This includes the military, which has portrayed the Rohingya as a security threat to justify its actions.
- **Economic Factors:** Rakhine State is one of the poorest regions in Myanmar. Competition over scarce resources has fuelled tensions between the Rohingya and other ethnic groups.
- **Military Actions:** The Myanmar military's operations against the Rohingya, often justified as counter-insurgency measures, have led to widespread violence, displacement, and human rights abuses.

Source: [India Today](#)

FIRST-EVER MEGAQUAKE ADVISORY ISSUED BY JAPAN

Context: After a 7.1-magnitude earthquake shook southern Japan on August 8, the country's meteorological agency issued its first-ever "megaquake advisory". The warning said the likelihood of strong shaking and large tsunamis is higher than normal on the Nankai Trough.

Background:

- The advisory is a warning and not an accurate prediction of earthquake as such. The advisory asked residents to prepare, review evacuation routes, and consider potential future warnings.

Nankai Trough and Earthquake Risk in Japan

- The Nankai Trough is a 900 km long underwater subduction zone where the Eurasian Plate collides with the Philippine Sea Plate, pushing the latter under the former. This builds tectonic stress that can cause megaquakes (earthquakes with a magnitude larger than 8).

Risk:

- A magnitude-7.1 earthquake occurred recently near the Nankai Trough, raising concerns about the potential for a devastating megaquake.
- In January 2022, Japan's Earthquake Research Committee estimated a 70% probability of a magnitude 8-9 megaquake occurring along the Nankai Trough within the next 30 years.
- Such a quake could affect a large area from central Shizuoka to southwestern Miyazaki, with

tsunami waves up to 98 feet high potentially reaching Japan's Pacific coasts within minutes.

Potential Impact:

- A 2013 government report found that a major Nankai Trough earthquake could impact an area that covers about a third of Japan and where about half the country population of more than 120 million people lives is.
- The economic damage due to the disaster could go up to \$1.50 trillion, or more than a third of Japan's annual gross domestic product.

Predicting Earthquakes:

- Earthquakes cannot be accurately predicted.
- An accurate prediction of an earthquake needs a precursory signal from within the earth, indicating a big quake is on the way. The signal must also occur only before large earthquakes so that it does not indicate every small movement within the earth's surface. Currently, there is no equipment to find such precursors.

Source: [Indian Express](#)

CONFLICT IN SUDAN

Context: Recently, at least 80 people killed in strike by Sudan paramilitary forces.

Background:

- This attack occurred despite recent U.S.-sponsored talks aimed at ending the 16-month-long war.

Key takeaways



- Sudan is bordered by Egypt to the north, the Red Sea to the northeast, Eritrea and Ethiopia to the east, South Sudan to the south, the Central African Republic to the southwest, Chad to the west, and Libya to the northwest.

- Its capital is Khartoum, situated at the confluence of the Blue Nile and White Nile rivers.

- In modern times, it has experienced significant political and social upheaval, including civil wars and the secession of South Sudan in 2011.

- **The country is currently under a transitional government following a military coup.**

Main Causes of the Conflict in Sudan:

- **Power Struggle:** The primary cause is the power struggle between the **Sudanese Armed Forces (SAF)** and the **Rapid Support Forces (RSF)**. The leaders of these groups are vying for control of the country.

- **Historical Tensions:** Sudan has a history of political instability, marked by numerous coups and civil wars since its independence in 1956. The overthrow of longtime dictator Omar al-Bashir in 2019 led to a fragile transitional government, which was later disrupted by a military coup in 2021.

- **Economic Factors:** Sudan's economy has been in crisis for years, exacerbated by corruption, mismanagement, and international sanctions. The competition over control of economic resources, particularly gold mines, has fuelled tensions between rival factions.

- **Ethnic and Regional Divisions:** Ethnic and regional divisions have also played a significant role. The

RSF has its origins in the Janjaweed militia, which was involved in the Darfur conflict and accused of committing atrocities against non-Arab populations.

- **sFailed Peace Processes:** Despite multiple attempts at peace talks and ceasefires, the lack of a comprehensive and inclusive peace process has hindered efforts to resolve the conflict.

Source: [Hindu](#)

JAMAAT-E-ISLAMI BANGLADESH (Jel): A POLITICAL HISTORY

Context: Jamaat-e-Islami Bangladesh has made a political comeback in Bangladesh after the Sheikh Hasina-led Awami League government was toppled on **August 5**

Background:

- During 15-year prime ministerial tenure of Sheikh Hasina, one of the most dramatic moments came in 2016 when Motiur Rahman Nizami, the leader of Jel Bangladesh, was hanged to death.

Sheikh Hasina and Jamaat-e-Islami Bangladesh (Jel): A Political History

- Hasina labeled the protesters as '**razakars**,' a term for those who opposed Bangladesh's liberation in 1971. Ironically, her efforts to suppress anti-liberation forces, particularly the Jamaat-e-Islami Bangladesh (Jel), were only partially successful.
- The execution of Motiur Rahman Nizami, Jel's leader, in 2016 marked a significant blow to the group and revealed the Jel's diminished power, as their supporters failed to mobilize in protest.
- In 1971, as the **Pakistani military's 'Operation Searchlight' rolled on**, a contingent of the Pakistan Army reached Demra and with the help of local collaborators, killed civilians. A War Crimes Tribunal set up by the Hasina government conducted an inquiry and found that it was the Al Badr militia, led by Nizami, that supported the Pakistan military in carrying out the Demra massacre.

Jel's Historical Context:

- The Jel Bangladesh is an offshoot of the Jamaat-e-Islami, which was established in 1941, Lahore. Soon after its emergence, the Jel opposed the Pakistan movement of Mohammed Ali Jinnah. However, after the formation of the state of Pakistan, it reinvented itself by demanding an Islamic Constitution and Islamic regime.
- In **East Pakistan (now Bangladesh)**, Ghulam Azam led the movement, which grew strong under his leadership. However, the Jel faced crackdowns, including a ban but it revived itself in the 1960s, aligning with conservative causes.
- In the 1970 elections, the Jel opposed Sheikh Mujibur Rahman, who advocated for greater autonomy for East Pakistan. As the movement for Bangladesh's independence grew, the Jel aligned with Pakistani forces to resist the split.
- After **Pakistan's defeat in 1971**, Azam fled Bangladesh. After a period of uncertainty, the Jel Bangladesh was launched in 1979. The group participated in elections and became a significant political force, aligning with various parties over the years.
- The demolition of the **Babri Masjid in 1992** further bolstered the Jel's position as the outfit took advantage of public sentiment and established itself as a voice of the religious majority in Bangladesh. It continued to play role in the country's politics, despite public backlash for its stance about **1971 liberation war**.
- **Recent Developments:** After Nizami's execution, the Jel, under new leadership, shifted

tactics by enhancing its presence on social media and in educational institutions, particularly where Hasina's heavy-handed policies had sparked discontent.

- Although Hasina eventually banned the Jel, it was too late to prevent the group from playing a key role in the pro-democracy movement that contributed to her government's downfall in 2024. Just as the Jel had joined forces with the Awami League and the BNP to overthrow the Ershad regime in 1990, it again allied with student movements to challenge Hasina's rule.

Source: [Hindu](#)

PM MODI PROPOSES GLOBAL COMPACT

Context: PM Narendra Modi proposed a human-centric "**Global Development Compact**," during the Voice of the Global South Summit.

Background:-

Global Development Compact will be inspired by the development priorities set by the countries of the Global South.

Key takeaways

- PM Narendra Modi, in his opening remarks at the virtually held India-hosted third summit, emphasized that global governance and financial institutions established in the last century have failed to address the challenges of the current century.

Global Development Compact:

- **Debt-Free Development:** PM Modi stated that under this new Compact, needy countries will not be burdened with debt in the name of development finance. Instead, the Compact will draw on India's own development journey and its experiences in development partnerships.

Closing the Global North-South Gap:

- **Call for Unity:** PM Modi urged the Global South to unite, speak with one voice, and strengthen one another by learning from each other's experiences. He suggested that the upcoming Summit of the Future at the UN next month could be a significant milestone in this effort.

Understanding Global North and Global South:

- **Global South:** Refers to the countries of Asia, Africa, Latin America, and Oceania, where 88% of the world's population lives. These countries often have a history of colonialism and have historically lagged in industrialization and development.
- **Global North:** Comprises the developed countries of North America and Europe, which have historically pursued imperial policies and are characterized by higher levels of development.
- **Distinctions:** The Global South typically exhibits lower development levels, higher income inequality, rapid population growth, agrarian economies, lower quality of life, shorter life expectancy, and significant external dependence. However, the term is more about political, geopolitical, and economic similarities than strict geographical location.

Source: [Indian Express](#)



Economy



PERPETUAL BONDS

Context: Canara Bank issued India's first **Additional Tier I** perpetual bonds since recent rule changes, attracting strong investor interest with a lower-than-expected coupon of **8.27%**.

Background: This marks a revival in demand for these bonds, which had declined due to regulatory challenges. The **Securities and Exchange Board of India's (SEBI)** recent valuation tweak, allowing mutual funds to value these bonds based on the call option, has made them more attractive.

About Perpetual Bonds

- Also known as **perpetual notes or perps**, are a type of bond that has no maturity date.
- They are issued by companies or organizations to **raise capital, and the issuer is not required to repay the principal amount.**

Characteristics:

- **No maturity date:** Perpetual bonds do not have a fixed maturity date, and the issuer is not obligated to repay the principal.
- **Interest payments:** Investors receive regular interest payments, usually semi-annually or annually, but the principal amount remains outstanding.
- **High credit risk:** Perpetual bonds are considered high-risk investments since the issuer may not repay the principal, and the investor may face credit risk.
- **Subordinated debt:** Perpetual bonds are often subordinated to other debt obligations, meaning they have a lower claim on assets and earnings.
- **Callable:** Some perpetual bonds may be callable, allowing the issuer to redeem the bonds at a specified price.

Types of perpetual bonds:

- **Fixed-Rate Perpetual Bonds:** Offer a fixed interest rate throughout their existence.
- **Floating-Rate Perpetual Bonds:** Interest rates adjust periodically based on a reference rate (e.g., LIBOR).
- **Convertible Perpetual Bonds:** Can be converted into equity shares after a specified period.
- **Hybrid Perpetual Bonds:** Combine features of different bond types.

Common Issuers:

- **Financial Institutions:** Banks and other financial entities use perps for capital management.
- **Corporations:** Especially those seeking long-term financing.
- **Governments:** To fund infrastructure projects or manage debt.
- **Infrastructure Projects:** Funding large-scale developments.

Source: [Business Standard](#)

PREDATORY PRICING

Context: Recently, commerce and industry minister Piyush Goyal accused large e-commerce players, such as Amazon, of indulging in predatory pricing.

Background:

- The role of e-commerce in the Indian economy needs to be carefully evaluated and made citizen-centric to ensure there is no social disruption that may affect about 100 million small retailers across the country, the Minister said.

About Predatory pricing:

- It's a strategy where a **company sets its prices extremely low with the intention of driving competitors out of the market**. Once the competition is eliminated, the company can then raise prices to recoup its losses and potentially establish a monopoly.

Mechanism

- **Initial Phase:** The company lowers its prices significantly, often below the cost of production. This makes it difficult for competitors to sustain their businesses.
- **Elimination of Competitors:** Competitors, unable to match the low prices, may be forced to exit the market.
- **Monopoly and Price Increase:** Once the competition is reduced or eliminated, the company can raise prices to recoup losses and maximize profits.

Source: [Hindu Businessline](#)

REGIONAL RURAL BANKS (RRB'S)

Context: Union Finance Minister Nirmala Sitharaman recently chaired a review meeting of the Regional Rural Banks (RRBs) in New Delhi.

Background:

- The meeting, with all 43 present RRBs, focused on business performance, upgrading digital technology services, and fostering business growth in MSME clusters.

About Regional Rural Banks (RRBs)

- RRBs were established on October 2, 1975, following the recommendations of the **Narasimham Committee on Rural Credit**. They are regulated by the Reserve Bank of India (RBI) and are governed by the Regional Rural Banks Act, 1976.
- **Ownership:** The ownership structure of RRBs is shared among the Government of India (50%), the concerned State Government (15%), and the sponsoring bank (35%).

Features of RRBs:

- **Regional Focus:** RRBs operate within specified regions, typically covering one or more districts in a state.
- **Target Audience:** They primarily serve rural and semi-urban areas, focusing on the agricultural sector and rural development.
- **Products and Services:** RRBs offer a range of banking services including savings and current accounts, fixed deposits, loans, and digital banking services like mobile banking and internet banking.

Functions of RRBs:

- **Credit Provision:** Providing credit to small and marginal farmers, agricultural labourers, and rural

artisans to support agricultural and rural development.

- Government Schemes: Implementing various government schemes such as the disbursement of wages under MGNREGA and distribution of pensions.
- Support to MSMEs: Offering credit and financial services to micro, small, and medium enterprises (MSMEs) in rural areas.

Source: [PIB](#)

GROSS ENVIRONMENTAL PRODUCT (GEP) INDEX

Context: Uttarakhand has become the first Indian state to launch a Gross Environment Product Index.

Background:

- It has not just become the first state to launch a GEP Index, but also the first in the world to go beyond ecosystem services to ecosystem growth. Simply put, it does not only calculate what services we get from the environment but also what we put back into the environment.

About Gross Environmental Product (GEP) Index

- The GEP Index is an innovative metric designed to **measure the environmental health and quality of a region**. It goes beyond traditional economic indicators by incorporating ecological factors into its calculations.

Purpose and Significance

- It evaluates both the benefits we receive from the environment and the contributions we make to it. This dual approach helps in understanding the overall ecological impact of human activities.
- It aims to **promote sustainable practices** and policies that enhance ecological health.

Components of the GEP Index

- The GEP Index is based on **four main pillars**:
 1. **Air Quality**: Measures the quality and cleanliness of the air.
 2. **Water Resources**: Assesses the availability and purity of water bodies.
 3. **Soil Health**: Evaluates soil quality and its ability to support plant life.
 4. **Forest Cover**: Considers the extent and health of forested areas.
- The formula for the GEP Index is: $\text{GEP Index} = \text{Air-GEP Index} + \text{Water-GEP Index} + \text{Soil-GEP Index} + \text{Forest-GEP Index}$.

Source: [The Week](#)

DEBT SWAPS

Context: IMF recently released, the “Debt for Development Swaps” framework.

Background:

- This framework is designed to help stakeholders optimize their decision-making on when, where, and how to use debt-for-development swaps effectively.

Key takeaways:

- Debt swaps are financial transactions where the terms of an existing debt are exchanged for different obligations or assets.

Some common types of debt swaps:

- **Debt-for-Equity Swap:** In this swap, a creditor agrees to cancel a portion or all of a debtor's outstanding debt in exchange for equity in the debtor's company. This is often used in corporate restructuring to reduce debt burdens.
- **Debt-for-Debt Swap:** This involves exchanging one type of debt for another, often with different terms, such as interest rates, maturities, or currencies. This can help the debtor manage risk or improve cash flow.
- **Debt-for-Nature Swap:** A debtor country agrees to fund conservation or environmental protection projects in exchange for a portion of its debt being forgiven. This is typically arranged between a debtor nation and a creditor, often with the involvement of an environmental organization.
- **Debt-for-Development Swap:** Similar to debt-for-nature swaps, but the funds saved from debt forgiveness are redirected towards social or economic development projects, such as education, healthcare, or infrastructure.
- **Debt-for-Bond Swap:** Existing debt is exchanged for new bonds, often with more favorable terms. This can be used to extend the maturity of debt, reduce interest payments, or restructure a country's or company's obligations.
- Debt swaps are used as **tools for debt restructuring, risk management, or achieving policy objectives, such as promoting environmental sustainability or economic development.**

Source: [IMF](#)

YEN CARRY TRADE

Context: Recently, major stock markets across the world experienced their sharpest decline in decades and the yen carry trade was one reason behind this decline.

Background:

- The yen carry trade is a classic example of how interconnected global financial markets are, and how changes in one country's monetary policy can have widespread effects.

About Yen carry trade

- A carry trade is a trading strategy that **involves borrowing at a low-interest rate and investing in an asset that provides a higher rate of return.**
- It typically involves borrowing in a low-interest rate currency and converting the borrowed amount into another currency.
- Alternatively, the proceeds could be deployed into assets such as stocks, commodities, bonds, or real estate denominated in the second currency.

Yen Carry Trade:

- The Japanese yen is one of the most widely used currencies for carry trades.
- The yen has been popular for carry trades because Japan has maintained a zero-interest rate policy for over two decades. The idea behind low interest rates is to stimulate economic activity.

Recent Developments:

- **Interest Rate Increase:** The Bank of Japan recently raised its interest rate to 0.25%, causing the yen to strengthen.
- **Investor Reaction:** As the yen appreciated, investors who had borrowed yen were forced to sell their higher-yielding assets to repay their loans, leading to a sell-off in global markets.

Source: [Business Standard](#)

E-RUPEE

Context: Major fintech companies, including Google Pay, PhonePe, Amazon Pay, Cred, and Mobikwik are looking to join the Reserve Bank of India's (RBI) digital currency project by allowing their users to transact in e-rupee via Unified Payments Interface (UPI).

Background:

- Initially, only banks were allowed to offer e-rupee transactions, but the RBI has now opened the project to payment firms to increase transaction volumes and user engagement.

About e - rupee

- The e-rupee, or digital rupee, is a digital currency issued by the RBI and was launched on a pilot basis in December 2022.
- It is available entirely in electronic form and does not leave computer network.

Types:

- Retail e-Rupee:** Intended for general public use, allowing individuals to make everyday transactions.
- Wholesale e-Rupee:** Designed for financial institutions to facilitate interbank transactions and other large-scale financial activities.

Features:

- Legal Tender:** The e-rupee is like banknotes issued by the RBI and is a legal tender that can be used to make transactions. The only difference is that they can only be transacted online.
- Non-Interest Bearing:** The digital rupee in users wallets does not attract interest payments from the central bank.
- Conversion:** Deposits held in banks can be converted into digital rupees and vice versa for ease of use.

Implementation

- Initially offered by a select group of public and private banks in a few major cities.
- Usage: Can be used for both person-to-person and person-to-merchant transactions.

Source: [Hindu](#)

PURCHASING MANAGER'S INDEX (PMI)

Context: The latest data indicates that the Services Purchasing Managers' Index (PMI) for July showed a slight decline, dropping to 62.3 from 64.2 in June¹. Despite this mild dip, the services sector activity remains robust, with international sales growing at a notable pace.

Background:

- The PMI is widely used across the world, with organizations like the Institute for Supply Management (ISM) in the U.S. and IHS Markit producing PMI data for various countries.

About Purchasing Managers' Index (PMI):

- The PMI is a key economic indicator that reflects the prevailing direction of economic trends in the manufacturing and service sectors.
- The purpose of the PMI is to provide information about current and future business conditions to company decision makers, analysts, and investors.

- It considers key areas such as new orders, inventory levels, production, supplier deliveries, and employment.
- PMI is compiled by IHS Markit for more than 40 economies worldwide and data is released by various organizations globally, such as S&P Global for India.
- It is **calculated separately for the manufacturing and services sectors and then a composite index is also constructed.**

Interpretation:

- The PMI is a number from 0 to 100.
- A PMI above 50 indicates expansion compared to the previous month.
- A PMI below 50 indicates contraction.
- A PMI of 50 indicates no change.

Source: [Business Standard](#)

ASSET MANAGEMENT COMPANIES (AMC)

Context: The Securities and Exchange Board of India (SEBI) has issued a circular mandating that CEOs, Managing Directors (MDs), or equivalent officials of Asset Management Companies (AMCs) will be held responsible and accountable for implementing mechanisms to deter potential market abuse.

Background:

- AMCs are required to establish an institutional mechanism to detect and deter market abuse, including front-running and fraudulent transactions in securities. This move aims to protect investors and ensure the integrity of the securities market by holding top officials accountable for preventing market abuse.

About Asset Management Companies

- An AMC is a financial institution that pools funds from multiple investors and invests in various financial instruments, such as stocks, bonds, and real estate, to generate returns for the investors in exchange for a fee.
- AMCs are commonly referred to as money managers or money management firms.
- Different types of AMCs are Hedge Funds, Mutual Funds, Index Funds, Exchange-Traded Funds (ETFs), Private Equity Funds and Other Funds.
- Retail Investors, Institutional Investors, Public Sector (Government Organizations), Private Sector and High-Net-Worth are the clients of AMCs.

Roles and Responsibilities:

- Investment Decisions, Portfolio Management, Fund Managers, Investment Strategies, Research Analysts.

Regulation:

- The Securities and Exchange Board of India (SEBI) regulates and controls AMCs in India.

Source: [Hindu](#)

CONTRIBUTION OF INDIA'S SPACE SECTOR IN GDP

Context: India's space sector has directly contributed about \$24 billion (₹20,000 crore) to India's Gross Domestic Product over the last decade.

Background: Contribution of India's space sector has directly supported 96,000 jobs in the public and

private sector. For every dollar produced by the space sector, there was a multiplier effect of \$2.54 to the Indian economy and India's space force was 2.5 times "more productive" than the country's broader industrial workforce.

India's space sector:

- It's a dynamic and rapidly growing field, primarily driven by the ISRO.
- **ISRO** is the main agency responsible for India's space missions. It has achieved significant milestones, including the Mars Orbiter Mission (Mangalyaan) and the Chandrayaan missions to the Moon.

How India's achievements in the space sector have contributed to the Indian economy?

1. Economic Growth

- **GDP Contribution:** Over the past decade, the space sector has added approximately \$60 billion to India's GDP. This includes direct, indirect, and induced benefits from various space-related activities.
- **Investment Multiplier:** For every dollar invested in the space sector, an additional \$2.54 has been contributed to the national economy. This multiplier effect showcases the sector's efficiency in generating economic value.

2. **Job Creation: Employment Opportunities:** The space sector has generated around 4.7 million jobs, supporting both public and private sectors. This includes direct employment in space agencies and indirect jobs in related industries.

3. Technological Advancements

- **Innovation and Development:** The development of advanced satellite technology and launch vehicles has spurred innovation across various industries, including telecommunications, weather forecasting, and navigation.
- **Start-up Ecosystem:** The space sector has seen a rapid growth of start-ups, contributing to technological advancements and economic diversification.

4. International Collaboration and Commercialization

- **Global Partnerships:** Collaborations with international space agencies and commercial satellite launches have positioned India as a key player in the global space market.
- **Revenue Generation:** The revenues of India's space sector have grown from \$3.8 billion in 2014 to \$6.3 billion in 2023, reflecting the sector's expanding commercial activities.

5. Socio-Economic Benefits

- **Fisheries and Agriculture:** Satellite-based services have provided critical support to sectors like fisheries and agriculture, enhancing productivity and sustainability.
- **Disaster Management:** Space technology has improved disaster management capabilities, helping mitigate the impact of natural disasters and saving lives.

Way forward:

- Promoting science, technology, engineering, and mathematics (STEM) education to build a skilled workforce for the space sector.
- Establishing training programs and partnerships with educational institutions to prepare the next generation of space scientists and engineers.
- By focusing on these areas, India can continue to leverage its space sector to drive economic growth, technological innovation, and international collaboration, ensuring a bright future for the country's space endeavors.

Source: [The Hindu](#)



GEOGRAPHY



CLOUDBURSTS

Context: Several cloudbursts occurred in Himachal Pradesh recently. Five people have died and around 50 are missing.

Background:

- The cloudbursts also triggered flash floods that washed away several buildings, bridges, and roads cutting off several areas.

About cloudbursts

- A cloudburst is a localised but intense rainfall activity.
- Not all instances of very heavy rainfall, however, are cloudbursts. Rainfall of 10 cm or more in an hour over a roughly 10 km x 10-km area is classified as a cloudburst event. By this definition, 5 cm of rainfall in a half- hour period over the same area would also be categorized as a cloudburst.

Causes

- **Orographic Lift:** Cloudbursts frequently occur in mountainous regions where moist air is forced to rise over a mountain, cooling and condensing rapidly.
- **Convective Clouds:** They can also result from convective clouds, such as cumulonimbus clouds, which can extend up to 15 kilometers (9.3 miles) above the ground.
- **Sudden Condensation:** When warm air mixes with cooler air, it can lead to rapid condensation and precipitation.

Effects

- **Flooding:** The intense rainfall can lead to flash floods, causing significant damage to infrastructure and posing risks to life.
- **Disasters:** Cloudbursts can result in landslides, especially in hilly areas, further exacerbating the damage.

Detection and Forecasting

- **Challenges:** Detecting cloudbursts is challenging due to their small scale. Satellite precipitation radars often miss them, and weather models struggle to simulate them accurately.
- **Forecasting:** Predicting cloudbursts remains difficult, particularly in hilly regions where the interaction between moisture and terrain is complex.

Source: [Down To Earth](#)

OL DOINYO LENGAI VOLCANO

Context: Ol Doinyo Lengai Volcano has been steadily sinking into the ground for the past 10 years, a new study shows, and the cause could be a deflating reservoir directly beneath one of the volcano's two craters.

Background:

- The research reveals that the ground around the summit of Ol Doinyo Lengai volcano, which sits along an active rift zone in East Africa, subsided at a rate of 1.4 inches (3.6 centimeters) per year between 2013 and 2023.

About Ol Doinyo Lengai Volcano:

- Ol Doinyo Lengai, meaning “Mountain of God” in the Maasai language, is a unique and active stratovolcano located in the Gregory Rift, south of Lake Natron in Tanzania.

Geography and Structure

- **Location:** Situated in the Arusha Region of Tanzania.
- **Elevation:** The volcano rises to an elevation of approximately 2,962 meters (9,718 feet).
- **Crater:** It has two main craters, with the northern crater being the active one.
- **Unique Lava:**
 - It's the **only known volcano on Earth** that is actively erupting carbonatite magma — extremely runny magma that is saturated with alkali elements, such as calcium and sodium, and poor in silica.
 - Most terrestrial magmas are rich in silica, a compound made from bonded chains of silicon and oxygen that binds molten rock together and gives it a viscous consistency.
 - But unlike those other magmas, whose weight is between 45 and 70% silica, the magma that feeds Ol Doinyo Lengai contains less than 25% silica by weight.
- **Appearance:**
 - Although the lava is black or dark gray when it erupts, it quickly turns white once it dries.
 - It is because carbonatite lava weathers differently than silicate lava due to its chemical makeup.

Source: [Livescience](#)

SARISKA TIGER RESERVE

Context: Recently, the Supreme Court-mandated Central Empowered Committee has flagged serious harm to wildlife in the Sariska Tiger Reserve in Rajasthan.

Background:

- The committee highlighted that the heavy vehicular traffic within the core area of the reserve is severely affecting tiger breeding and causing significant stress to the animals. To address these issues, the CEC has recommended a blanket ban on private vehicles in the reserve.

About Sariska Tiger Reserve :

- It's located in Aravali hills and forms a part of the Alwar District of Rajasthan and was declared a wildlife sanctuary in 1955 and was declared the tiger reserve later in 1978, making it a part of India's Project Tiger.
- Sariska is the first tiger reserve to have successfully relocated Royal Bengal tigers in India.
- The Reserve is immensely rich in flora and fauna;
- **Flora:** Scrub thorn arid forests, rocky landscapes, semi-deciduous woodlands. Trees like Tendu, Dhok, and Khair.
- **Fauna:** Home to Royal Bengal Tigers, leopards, Nilgai, Sambar, chital, and various bird species including peafowl, vultures, and eagles.
- Kankarwadi fort is located in the center of the Reserve and it is said that Mughal emperor

Aurangzeb had imprisoned his brother Dara Shikoh at this fort in struggle for succession to the throne. The Reserve also houses a famous temple of Lord Hanuman at Pandupole related to Pandavas.

Source: [The Print](#)

LAKE TURKANA

Context: Findings of the first comprehensive survey of Lake Turkana in 50 years was released recently.

Background:

- Lying in a hot, arid, and remote region, Lake Turkana provides resources for communities on the lakeshore and surrounding areas. However, its semi-saline waters, driven by high evaporation rates and fluctuating lake levels of up to 8 meters per decade, have historically hindered sustainable development initiatives.

About Lake Turkana



- **Location:** It's located in the Great Rift Valley in northern Kenya, extending into southern Ethiopia.

- Lake Turkana is Africa's 4th largest lake.
- It is the world's largest permanent desert lake and the largest alkaline lake.

- **Geographical Features:**

- o The lake is surrounded by volcanic rock and desert.

- o It is fed by three main rivers: the Omo, Turkwel, and Kerio.

- o The lake has no outlet, which

contributes to its high salinity and alkalinity.

- **Biodiversity:** Lake Turkana is home to diverse wildlife, including Nile crocodiles, hippos, and various fish species. It is also a critical habitat for migratory birds and other endemic species.
- **Cultural Significance:**
 - o The region around Lake Turkana is known as the "Cradle of Mankind" due to the discovery of some of the oldest human fossils.
 - o It is inhabited by indigenous communities, including the Turkana, El Molo, and Dassanach people, who rely on the lake for fishing and livestock.
- **Environmental Concerns:**
 - o The lake faces environmental challenges, including declining water levels due to dam construction on the Omo River in Ethiopia.
 - o Climate change and overexploitation of resources are also significant threats to the lake's ecosystem.
- **UNESCO World Heritage Site:** Lake Turkana is part of the Lake Turkana National Parks, a UNESCO World Heritage Site since 1997, recognized for its ecological and archaeological importance.

- **Economic Importance:**

- o The lake supports local economies through fishing, tourism, and livestock grazing.
- o It also holds potential for hydroelectric power generation, though this has led to environmental debates.

Source: [UNESCO](#)

AS ARCTIC THAWS, NEW EVIDENCE OF LOOMING 'MERCURY BOMB'

Context: Scientists have found new evidence that melting Arctic permafrost could unleash large sums of mercury, a dangerous toxin.

Background:

- Though the mercury released from melting permafrost doesn't pose a toxic threat today, its impact will grow over time. It gradually accumulates in the food chain with fish and wild animals consumed by humans posing a future threat as it builds.

About permafrost

- It's a layer of soil or sediment that remains frozen for at least two consecutive years. It is primarily found in Polar Regions and high mountain areas where temperatures are consistently low.
- Permafrost covers approximately 22.8 million square kilometers (about 8.8 million square miles) in the Northern Hemisphere. It is found in regions like Alaska, Canada, Greenland, Russia, and parts of China and Eastern Europe.
- **Composition and Structure**
 - o Components: Permafrost consists of soil, gravel, and sand, bound together by ice. It also contains organic material like dead plants and animals.
 - o Thickness: The thickness of permafrost can vary significantly, ranging from a few meters to over 1,500 meters (about 4,900 feet) in some areas.

Why is there mercury in the Arctic?

- Earth's natural atmospheric circulation tends to transport pollutants to higher latitude. This results in mercury accumulating in the Arctic where it is absorbed by plants which then die and become part of the soil.
- This freezes in the permafrost - where the ground stays frozen all year round - and over thousands of years, mercury concentrations have built up in the soil. In this form, it isn't particularly dangerous.
- The toxic metal is released when the soil thaws - something climate change is making increasingly common. The Arctic is warming four times faster than the global average.
- Previously sequestered by permafrost in the sediment for millennia, this mercury is now being eroded and released into the environment.
- It could pose a major environmental and health threat to the 5 million people living in the Arctic and more than 3 million people who live in areas where the permafrost is expected to disappear completely by 2050.

Source: [Euronews](#)

WATERSPOUT

Context: At least one man died and six people are missing after a luxury yacht was hit by a violent storm off the coast of Sicily, Italy recently. Experts suggest the storm could have been a waterspout.

Background:

- A waterspout is a large column of air and mist rotating over a water body. It usually appearing as a funnel-shaped cloud in contact with the water.

Key takeaways:

- A waterspout is a column of rotating, cloud-filled wind that descends from a cumulus cloud to a body of water, such as an ocean or lake. Despite its name, a waterspout is not filled with water from the ocean or lake; instead, the water inside a waterspout is **formed by condensation in the cloud**.

Formation of waterspouts:



- They form when winds **blowing in different directions collide, creating a rotating column of air near the surface**. This air rises, carrying water vapour high into the sky, where it forms rain showers, storms, and cumulus clouds.

- **The process involves five stages:**

1. **Dark Spot:** The water surface darkens where the vortex reaches it.
2. **Spiral Pattern:** Light and dark bands spiral out from the dark spot.
3. **Spray Ring:** A swirling ring of sea spray forms around the dark spot.

4. **Mature Vortex:** The waterspout reaches its most intense stage, visible from the water surface to the clouds.
5. **Decay:** The waterspout collapses as the flow of warm air weakens.

- **There are two main types of waterspouts:**

- **Tornadic Waterspouts:** These start as true tornadoes influenced by severe thunderstorms and are the most powerful and destructive type.
- **Fair-Weather Waterspouts:** More common and less dangerous, these form in developing storm systems but not in storms themselves.

- **Regions where Waterspouts are frequently occurred:**

- Commonly found in **tropical and subtropical regions**. Here are some of the key areas where they frequently occur:
- **Florida Keys and Gulf of Mexico:** This region sees the highest number of waterspouts, with many forming during the late spring and summer months.
- **Mediterranean Sea:** Waterspouts are common off the coasts of Greece, Italy, and other Mediterranean countries.
- **Great Lakes:** Although less frequent, waterspouts can also form over the Great Lakes, especially during the late summer and early fall.
- **Western Coast of Europe:** This includes areas like the British Isles and the Baltic Sea.

- o East Coast of Australia: Waterspouts are also observed off the eastern coast of Australia.
- These regions provide the warm, moist conditions that are conducive to waterspout formation.

Source: [BBC](#)

GUMTI RIVER

Context: The Ministry of External Affairs (MEA) has clarified that the recent floods in Bangladesh were not caused by the opening of the Dumbur dam on the Gumti River in Tripura.

Background: The MEA stated that the flooding was primarily due to heavy rainfall in the catchment areas of the Gumti River, which flows through both India and Bangladesh. This clarification came after concerns were raised in Bangladesh about the impact of the dam on the flooding situation.

About Gumti river

- Also known as Gomati is a significant river flowing through the northeastern Indian state of Tripura and the Comilla district in Bangladesh.
- Origin: The Gumti River originates from Dumur in the northeastern hilly region of Tripura, India.
- **Course:**
 - o It flows through the state of Tripura, passing through towns like Udaipur, before entering Bangladesh.
 - o In Bangladesh, it flows through the Comilla district and eventually joins the Meghna River.
- Dumbur Dam: The river is dammed near Dumbur, creating a 40 square kilometers (15 sq mi) lake.
- Tributaries: Major right bank tributaries include Kanchi Gang, Pitra Gang, and San Gang. Left bank tributaries include Ek Chhari, Maharani Chhara, and Ganga.
- **Ecological Significance:**
 - o The river supports the **Gumti Wildlife Sanctuary**, contributing to the region's biodiversity.
 - o **Flooding:** The river is prone to flash floods, especially during the monsoon season. These floods can cause significant damage to the surrounding areas.

Source: [The Diplomat](#)

BALKAN REGION

Context: Balkan migrant boat tragedy death toll rises to 12.

Background: The boat, which was carrying between 25 and 30 migrants, capsized while crossing the Drina River from Serbia to Bosnia.

About Balkan Region

- The Balkan region is located in southeastern Europe, includes countries such as Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Greece, Kosovo, Montenegro, North Macedonia, Romania, Serbia, and Slovenia.
- The region is bordered by the Adriatic Sea to the northwest, the Ionian Sea to the southwest, the Aegean Sea to the south, and the Black Sea to the northeast.

Why people are migrating to the Balkan region?

- **Economic Opportunities:** Many migrants are seeking better economic prospects. The Balkans offer opportunities for work, especially in sectors like agriculture, construction, and services.
- **Safety and Stability:** Some migrants are fleeing conflict, persecution, or instability in their home



countries. The Balkans serve as a transit route for those aiming to reach Western Europe, where they hope to find safety and stability.

- **Family Reunification:** Migrants often move to the Balkans to reunite with family members who have already settled in the region or are on their way to other parts of Europe.

- **Access to Services:** Limited access to basic services such as healthcare, education, and

housing in their home countries drives some migrants to seek better living conditions in the Balkans.

- **Geographical Position:** The Balkans are strategically located as a gateway to Europe. This makes the region a key transit point for migrants from the Middle East, Africa, and Asia.

Source: [The Hindu](#)

CHILE

Context: On a three-day visit to India, Chile’s Foreign Minister held a meeting with External Affairs minister S Jaishankar on Wednesday and discussed bilateral cooperation in trade and investment, agriculture, critical minerals, defence and space among other issues.

Background: Chile is a key partner of India in the Latin American region.

About Chile

- The Republic of Chile, is a country in western South America and is the southernmost country in the world and the closest to Antarctica. The capital and largest city of Chile is Santiago.

Geography

- **Location:** Chile stretches over 4,300 km (2,700 miles) from north to south, making it one of the longest countries in the world. It is bordered by Peru to the north, Bolivia to the northeast, Argentina to the east, and the Pacific Ocean to the west.
- **Landscape:** The country is known for its diverse landscapes, including the Atacama Desert in the north, the fertile Central Valley, and the rugged Andes mountains. It also includes Easter Island and several other Pacific islands.

Climate

- **Variety:** Due to its length, Chile experiences a wide range of climates, from the arid desert in the north to a Mediterranean climate in the central region, and a temperate climate in the south.
- **Natural Events:** Chile is prone to natural events such as earthquakes, volcanic eruptions, and tsunamis due to its location along the Pacific Ring of Fire.

Population and Culture

- **Population:** As of 2024, Chile has an estimated population of around 20 million people.
- **Language:** Spanish is the official language.

- **Culture:** Chilean culture is a blend of indigenous and European influences. The country is also known for its wine production and cuisine.



Government and Economy

- **Government:** Chile is a multiparty republic with a president as the head of state and government. The current president is Gabriel Boric.

- **Economy:** Chile has a mixed economy with a strong emphasis on mining, particularly copper, which is a major export. Other important sectors include agriculture, fishing, and manufacturing.

- **Natural Beauty:** The country is home to stunning natural landscapes, including the Torres del Paine National Park, the Lake District, and the fjords of Patagonia

Source: [Indian Express](#)



Environment and Ecology



GREEN TUG TRANSITION PROGRAM (GTTP)

Context: Recently, the Union Minister of Port Shipping and Waterways, Shri Sarbananda Sonowal officially launched the SOP for Green Tug Transition Program (GTTP) in New Delhi.

Background:

- A tug is a particular class of boat which helps mega-ships enter or leave a port.

Key takeaways of Green Tug Transition Program (GTTP):

- The GTTP is implemented by the **Ministry of Ports, Shipping, and Waterways**.
- The program is part of the broader '**Panch Karma Sankalp**' initiative, which aims to promote sustainable and environmentally friendly practices in India's maritime sector.
- The program is a **significant step towards decarbonizing maritime operations in India**.
- The GTTP is designed to **phase out conventional fuel-based harbour tugs operating in Indian Major Ports and replace them with green tugs powered by cleaner and more sustainable alternate fuels**.

Key Highlights of the GTTP

- Phase 1: Begins on October 1, 2024, and continues until December 31, 2027.
- **Participating Ports:** Four major ports—Jawaharlal Nehru Port Authority, Deendayal Port Authority, Paradip Port Authority, and V.O. Chidambaranar Port Authority—will each procure or charter at least two green tugs.
- **Investment:** Expected to involve an investment of around INR 1000 Crores in building green tugs.
- **Tug Specifications:** The first set of tugs will be battery-electric, with provisions for adopting other emerging green technologies such as hybrid, methanol, and green hydrogen as the industry evolves.
- Goal: By the end of 2040, all tugs operating in Indian Major Ports are envisioned to transition to green tugs, ensuring a standardized, eco-friendly fleet across the country.

Source: [PIB](#)

BANNI GRASSLANDS

Context: In a new study, researchers have assessed the suitability of different areas of Banni for sustainable grassland restoration, considering ecological value to be the primary criterion.

Background:

- Grassland areas are shrinking constantly due to anthropogenic activities, threatening biodiversity as well as the ecosystem services they provide.

Global Grassland Overview:

- Grasslands are **one of the largest ecosystems in the world**. They are distributed mainly in semiarid and arid areas, and include savannahs, grassy shrublands, and open grasslands.
- They support unique species and provide crucial ecosystem services like carbon storage, climate mitigation, and pollination.
- Grasslands are facing degradation due to deforestation, overgrazing, agriculture, urbanization, etc.

Approximately 49% of global grasslands are experiencing degradation.

Grasslands in India:

- Grasslands cover about 8 lakh sq. km, or 24% of India's total land area.
- They are under threat from agricultural conversion, plantations, invasive species, and development projects.

Banni Grassland in Gujarat:

- Located in Kachchh district, Banni is one of India's largest grassland tracts, reduced from 3,800 sq. km to 2,600 sq. km.
- **Study Findings by KSKV Kachchh University:** It grouped the prospective restoration zones of the Banni grassland into five categories depending on how suitable each zone was for restoration. They have found that as much as 937 sq. km (or 36%) of the existing grassland area was “highly suitable”, 728 sq. km (28 %) was “suitable”, 714 sq. km (27%) was “moderately suitable”, 182 sq. km. (7%) was “marginally suitable”, and 61 sq. km (2%) was “not suitable” for restoration.
- First two categories of “**highly suitable**” and “**suitable**” zones — which accounted for nearly two-thirds of the complete Banni grasslands — can be restored easily by simply providing them with adequate water sources, either through irrigation or rainwater harvesting.
- Moderately suitable zones also have potential, while marginally and non-suitable zones require more intensive management. It will need interventions such as terracing; with supplementary inputs like fertilizers; and protection from high water run-off and erosion, and salt intrusion.
- The study supports evidence-based recommendations for sustainable grassland management, biodiversity conservation, and livelihood enhancement.

Source: [Hindu](#)

MIYAWAKI METHOD

Context:The Chhattisgarh Forest Department recently organised a Van Mahotsav programme in the Manendragarh-Chirmiri-Bharatpur (MCB) district by planting saplings using the Miyawaki method.

Background:

- Around 6,000 saplings were planted at five different sites, including the collectorate premises.

About Miyawaki method

- It's developed by Japanese botanist Akira Miyawaki, is an innovative afforestation technique that involves planting native species densely to create fast-growing, self-sustaining forests.
- This method **mimics natural forest ecosystems and can transform barren or degraded land into lush green spaces within a few years.**
- This method is particularly beneficial in urban areas where space is limited but the need for green cover is high.
- It has revolutionised the concept of urban afforestation by turning backyards into mini-forests.

Features of the Miyawaki Method:

- **Dense Planting:** Trees are planted very close to each other, typically 2-4 trees per square meter.
- **Native Species:** Only native species are used, which are well-adapted to the local environment.
- **Rapid Growth:** Trees grow 10 times faster and the forest becomes 30 times denser than conventional methods.

- **Self-Sustaining:** After the initial 2-3 years of care, these forests become self-sustaining.

Benefits of the Miyawaki Method

- **Biodiversity:** Supports a variety of plant and animal species, enhancing local biodiversity.
- **Climate Mitigation:** Acts as carbon sinks, helping to sequester carbon dioxide and mitigate climate change.
- **Urban Cooling:** Reduces urban heat island effects by lowering temperatures in surrounding areas.
- **Soil Improvement:** Improves soil quality and prevents erosion.
- **Air Quality:** Significantly improves air quality by filtering pollutants.

Source: [Times of India](https://timesofindia.com)

IMD RAIN FORECASTS FOR MUMBAI WRONG BY 42% IN JULY

Context:In July, the IMD’s forecasts for Mumbai were off nearly by 42 per cent. Also on at least four days in July, the IMD had changed its forecast and warnings twice within a 24-hour window.

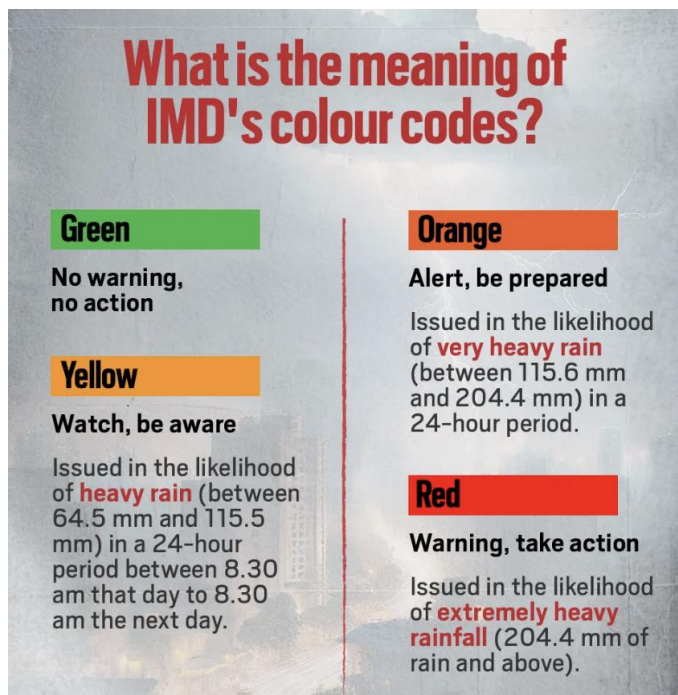
Background:

- The IMD issues its daily forecast at 1 pm, for a 24-hour period starting 8.30 am that day to 8.30 am the following day. There are five-, two- and three-day advance forecasts as well, but the 24-hour forecasts are considered the most accurate.

Key takeaways

Mumbai’s advanced Weather Radar Systems:

- **Mumbai houses two sophisticated Doppler weather radars:** an S-band radar at IMD’s Colaba observatory and a C-band radar in Veravali.



What is the meaning of IMD's colour codes?

<p>Green</p> <p>No warning, no action</p>	<p>Orange</p> <p>Alert, be prepared</p> <p>Issued in the likelihood of very heavy rain (between 115.6 mm and 204.4 mm) in a 24-hour period.</p>
<p>Yellow</p> <p>Watch, be aware</p> <p>Issued in the likelihood of heavy rain (between 64.5 mm and 115.5 mm) in a 24-hour period between 8.30 am that day to 8.30 am the next day.</p>	<p>Red</p> <p>Warning, take action</p> <p>Issued in the likelihood of extremely heavy rainfall (204.4 mm of rain and above).</p>

○ Apart from tracking cyclones, radars are also useful for tracking other weather developments like thunderstorm activities. For thunderstorms, the radars undertake scanning every 10 minutes. Through the regular scans, the radars help in providing localised forecasts depending on the cloud developments and other factors.

• The metropolitan region also benefits from over 140 automatic weather stations operated by the BMC, in addition to IMD’s observatories at Santacruz and Colaba.

• Despite these resources, the IMD’s forecasts, especially city-specific ones, often lack accuracy and timeliness. The IMD acknowledges imperfections in its forecasts but notes that accuracy has improved by 40-50% in the last decade.

• The IMD's observational network has expanded significantly, now operating over 400 weather stations, 1,000 automatic weather stations, and 1,300 automatic rain gauges.

• However, the unpredictability of weather systems, particularly in extreme weather events,

exposes the limitations of current forecasting models.

- IMD models often fail to capture extremely localised weather systems which bring extremely heavy rain within a short span of time, making them difficult to forecast.
- Mumbai's proximity to the sea and ghats adds complexity, making forecasting even more challenging due to dynamic weather changes.
- Factors like ocean and land temperatures, urban areas, and activities like irrigation can amplify convection, leading to unpredictable heavy rainfall.

Source: [Indian Express](#)

FOREVER CHEMICALS

Context: In a major breakthrough aimed at managing the long-term environmental impact of anthropogenic activity, American researchers have found a method to be able to trace the origin and the destination of forever chemicals.

Background:

- The researchers opted for a technology known as nuclear magnetic resonance (NMR) spectroscopy.

About Forever Chemicals

- Also known as **PFAS (per- and polyfluoroalkyl substances)**, are a group of over **9,000 synthetic (man made) chemicals that have been used in various industries since the 1940s.**
- **They do not break down easily in the environment or in the human body**, leading to their persistence over time.
- **Most well-known and studied are: Perfluorooctanoic acid (PFOA) and Perfluorooctane sulfonate (PFOS).**

Properties and Uses

- PFAS are known for their **strong carbon-fluorine bonds**, which give them unique properties such as resistance to heat, water, oil, and stains. These properties make them useful in a wide range of products, including:
 - o **Nonstick cookware** : Teflon and other non-stick coatings often contain PFAS.
 - o Water-repellent clothing and Stain-resistant fabrics and carpets
 - o **Food packaging**: Some food packaging, like microwave popcorn bags and fast-food wrappers, are coated with PFAS to resist grease.
 - o Firefighting foams
 - o **Cosmetics** : PFAS can be found in various cosmetics, including foundations, mascaras, and eye shadows, to make them long-lasting and waterproof.

Health Effects

- Exposure to PFAS can occur through contaminated water, food, air, and consumer products. Over time, these chemicals can accumulate in the body and have been linked to various health issues, including:
 - o Increased cholesterol levels and changes in liver enzymes
 - o Decreased vaccine response in children and Pregnancy-induced hypertension and

preeclampsia

- o Increased risk of kidney and testicular cancer

Environmental Impact : PFAS contamination is widespread, affecting water sources, soil, and even wildlife. Because they do not degrade easily, they can remain in the environment for thousands of years, posing long-term ecological risks.

Source: [Down To Earth](#)

PANAMA CANAL

Context: The Panama Canal, a crucial shipping route connecting the Atlantic and Pacific Oceans, faces an existential threat from climate change.

Background:

- The canal's operation depends on large amounts of freshwater. Climate change has led to more frequent droughts, reducing the water levels in these lakes. While droughts are a major concern, excessive rainfall can also cause problems by overflowing the lakes. These challenges highlight the broader impacts of climate change on global infrastructure and the need for adaptive strategies to ensure the continued functionality of such critical routes.

About Panama Canal



- This man-made waterway located in Panama, Central America connects **the Atlantic Ocean (via the Caribbean Sea) to the Pacific Ocean**, significantly reducing the travel distance for ships, which would otherwise have to navigate around the southern tip of South America via the Drake Passage or the Strait of Magellan.

- It cuts across the Isthmus of Panama, a narrow strip of land that separates the two oceans.

Importance:

- **Global Trade:** The canal is a critical conduit for international maritime trade, handling a significant portion of the world's shipping traffic.
- **Economic Impact:** It greatly reduces travel time and fuel costs for ships, enhancing the efficiency of global trade routes.
- **Strategic Value:** The canal holds strategic military importance, allowing for rapid naval deployment between the oceans.

Features

- **Locks System:** The canal's locks are a system of compartments with gates that function as water elevators, raising ships from sea level to the level of Gatun Lake, which is 26 meters above sea level.
- **Gatun Lake:** An artificial lake that forms a major part of the canal, providing the necessary water for the lock operations.
- **Expansion:** The canal was expanded in 2016 with the addition of a new set of locks, known as the Panama Canal Expansion or the Third Set of Locks, allowing for the passage of larger vessels, known as New Panamax or Neo-Panamax ships.

Source: [Indian Express](#)

HIMALAYAN TOWNS AND NEED FOR A DIFFERENT KIND OF DEVELOPMENT

Context:The Indian Himalayan Range (IHR), comprising 11 States and two Union Territories, had a decadal urban growth rate of more than 40% from 2011 to 2021. Towns have expanded, and more urban settlements are developing. Disasters are following.

Background:

- Himalaya's towns urgently need carrying capacity-based development plans.

Challenges in IHR Towns

- **Civic Issues:** Most Himalayan towns, including state capitals like Srinagar, Guwahati, Shillong, and Shimla, struggle with managing sanitation, solid and liquid waste, and water.
- **Inadequate Planning:** Planning institutions often use models copied from the plains, which are ineffective in the Himalayan context. Additionally, city governments face a 75% shortage of human resources.
- **Urban Expansion:** Cities like Srinagar and Guwahati are expanding into peripheries, leading to encroachment on open spaces, forests, and watersheds. For example, in Srinagar, land use changes between 2000 and 2020 showed a 75.58% increase, with a significant loss of water bodies.
- **Environmental Impact:** Nearly 90% of liquid waste enters water bodies untreated, exacerbating pollution and environmental degradation.

Causes of the Challenges

- **Urbanization and Tourism Pressure:** The IHR faces growing pressure from urbanization, high-intensity tourism, unsustainable infrastructure development, and resource overuse, compounded by climate change.
- **Environmental Degradation:** These pressures lead to water scarcity, deforestation, land degradation, biodiversity loss, and increased pollution.
- **Tourism Growth:** Tourism in the IHR has expanded with an anticipated average annual growth rate of 7.9% from 2013 to 2023, often replacing eco-friendly infrastructure with inappropriate and unsustainable developments.

Recommendations for Improvement

- **Localized Planning:** Towns need to be mapped for geological and hydrological vulnerabilities, with urban planning guided by climate resilience and local input.
- **Bottom-up Approach:** Planning should involve locals and move away from consultant-driven processes to ensure relevance and sustainability.
- **Focus on Sustainability:** Engage in broader discussions on sustainability, emphasizing eco-centric planning and public participation for urban development in the IHR.

Source: [Hindu](#)

NEELAKURINJI (STROBILANTES KUNTIANA)

Context: Neelakurinji (*Strobilanthes kunthiana*) has been added to the IUCN Red List of threatened species.

Background:

- The IUCN Red List is a critical indicator of the health of the world's biodiversity.

About Neelakurinji

- Also known as **Kurinji**, is a **shrub found in the shola forests** of the Western Ghats in Kerala, Karnataka, and Tamil Nadu. It's known for its **purplish-blue flowers**.

- This plant is famous for its unique blooming cycle, flowering once every 12 years.
- Neelakurinji grows at altitudes ranging from 1300 to 2400 meters. It used to cover the Anamalai Hills, Cardamom Hills, Nilgiri Hills, Palani Hills, Kudremukh, and Bababudangiri.
- The **Paliyan tribal people of TamilNadu** used the blooming of Neelakurinji to calculate their age.
- The flower has also given the Nilgiri Mountains their name, with “Nilgiri” meaning “blue mountains” in Tamil and Malayalam.
- Neelakurinji (*Strobilanthes kunthiana*) has been added to the **IUCN Red List of threatened species. It is classified as “Vulnerable” on the IUCN Red List.**
- The main threats to Neelakurinji include habitat loss due to conversion for tea and softwood plantations, urbanization, and the invasion of exotic species like eucalyptus and black wattle. Climate change and infrastructure development also pose significant risks.

Source: [Hindu](#)

PYROCUMULONIMBUS CLOUDS

Context: Intense wildfires in the United States and Canada have sparked the formation of pyrocumulonimbus clouds.

Background:-

- The occurrence of these clouds has increased in recent years. Typically, about 102 pyrocumulonimbus clouds were recorded globally in a year, with 50 of them in Canada. However, during last year's extreme wildfire season, Canada alone witnessed 140 pyrocumulonimbus clouds.

About pyrocumulonimbus clouds

- **The cumulonimbus flammagenitus cloud (CbFg), also known as the pyrocumulonimbus cloud,** is a type of cumulonimbus cloud that forms above a source of heat, such as a wildfire, nuclear explosion, or volcanic eruption.

Formation of Pyrocumulonimbus Clouds:

- Not all wildfires produce pyrocumulonimbus clouds; they form during **extremely hot fires or volcanic eruptions.** For example, the Australian bushfires of 2019-2020, with temperatures exceeding 800°C, led to their formation.
- **Process:** Intense heat from fires causes surrounding air to rise, carrying water vapour, smoke, and ash. As this air ascends and cools, water vapour condenses on ash particles, forming pyrocumululus or "fire clouds." But if there is sufficient water vapour available and the upward movement of hot air intensifies, pyrocumululus clouds can evolve into a pyrocumulonimbus cloud, reaching up to 50,000 feet and generating their own thunderstorms.
- **Impacts:** While they can produce lightning, they yield little rain, potentially igniting new fires far from the original source. Additionally, they can induce strong winds, accelerating and complicating wildfire spread.

Increasing Frequency:

- The exact cause of the rise in pyrocumulonimbus events is not fully understood, as research in this area is emerging. However, climate change, leading to higher global temperatures and more intense wildfires, is believed to contribute to their increased occurrence.

Source: [Indian Express](#)

CHHATTISGARH TO GET NEW TIGER RESERVE

Context: Chhattisgarh recently cleared a long-pending proposal to notify a new tiger reserve – the third largest in the country. This comes amid the dwindling tiger population in the state.

Background:

- Chhattisgarh's tiger population fell from 46 in 2014 to 17 in 2022, according to a National Tiger Conservation Authority report.

About Guru Ghasidas-Tamor Pingla Tiger Reserve

- It integrates an existing national park with a wildlife sanctuary, is Chhattisgarh's fourth reserve for tigers.
- In 2019, wildlife activist filed a PIL in the high court highlighting the decline in the big cat population in the state. The PIL accused the government of inaction in notifying and establishing the reserve, despite approval from the **National Tiger Conservation Authority and the Union Environment Ministry since 2012.**
- On 7th August, the state cabinet merged the regions of **the Guru Ghasidas National Park and the Tamor Pingla Sanctuary, located in the districts of Manendragarh-Chirmiri-Bharatpur, Koriya, Surajpur and Balrampur, to create the new reserve.**
- Guru Ghasidas-Tamor Pingla Tiger Reserve will be the **third largest tiger reserve in the country.** It spans 2,829 square kilometres across four northern districts of Chhattisgarh.
- Andhra Pradesh's Nagarjunasagar Srisailem Tiger Reserve is the country's largest tiger reserve and Manas Tiger Reserve in Assam is the second largest.

Source: [Indian Express](#)

DARK TOURISM

Context: As the rescue operations continue in Wayanad following the catastrophic landslides, the Kerala Police have issued a stern warning, urging people to avoid "dark tourism" in the disaster-stricken areas.

Background:

- The warning was posted on social media to prevent disruptions in the ongoing rescue efforts

About Dark tourism:

- Dark tourism, also known as black tourism, thanatourism or grief tourism, is tourism that is associated with **death, suffering and tragedy.**
- Dark tourism **encompasses travel to sites linked to events such as genocide, assassination, incarceration, ethnic cleansing, war, or natural disasters.**

Dark tourism sites Examples:

- Chernobyl, Ukraine** - Known for the 1986 nuclear disaster, Chernobyl has become a prominent dark tourism destination with guided tours available.
- Auschwitz-Birkenau, Poland** - The largest Nazi concentration and extermination camp of World War II, Auschwitz-Birkenau attracts numerous visitors annually who come to learn about the Holocaust.
- Pompeii, Italy** - The ancient city of Pompeii, buried by the eruption of Mount Vesuvius in AD 79, provides a preserved glimpse into life and death in the Roman Empire.

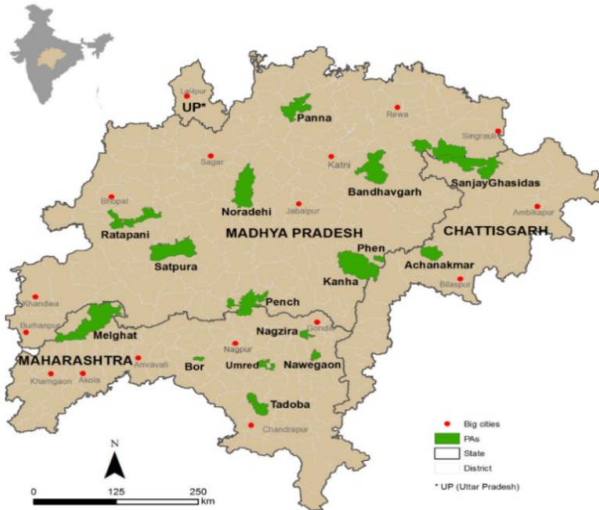
Source: [NDTV](#)

BANDHAVGARH TIGER RESERVE

Context: Alarming cases of tiger deaths and hunting incidents in Madhya Pradesh's Bandhavgarh Tiger Reserve and its surrounding forest divisions have been reported by a top official.

Background:

- The report highlights severe negligence in handling tiger cases and raises serious concerns about wildlife conservation in the region. Madhya Pradesh, known as the 'Tiger State,' is home to some of the highest concentrations of tigers in the country.



About BANDHAVGARH TIGER RESERVE

- It's located in the Umaria district of Madhya Pradesh, India and It lies in the heart of India, between the **Vindhya Range** and the eastern flanks of the Satpura hill ranges.
- Bandhavgarh boasts one of the highest tiger densities globally.
- Apart from tigers, the reserve is home to various other wildlife species, including leopards, deer, langurs, and numerous bird species.
- Bandhavgarh Tiger Reserve was declared a national park in 1968 and later in 1993, it was declared a tiger reserve under the Project Tiger initiative.

- The reserve is also crisscrossed by several small rivers and streams, including the Charanganga River, the Dammer River, and the Johilla River.

Conservation Challenges:

- Mining Activities:** Rising mining activities around the park pose a threat to the tigers.
- Human-Wildlife Conflict:** Historically, villagers and their cattle faced danger from tigers.

Source: [NDTV](https://www.ndtv.com)

STURGEONS

Context: According to a new report, poaching and trafficking are endangering the survival of four sturgeon species in one of their last strongholds—the lower Danube River in southeastern Europe. These species are among the most endangered fish globally.

Background:

- Sturgeons are **iconic fish of ancient origin, present already in the time of dinosaurs**. They award a cultural, economic and natural value to many rivers of the Northern hemisphere and have become symbols for healthy and free flowing river systems.

About Sturgeons

- Ancient Origins:** Sturgeons have been around for millions of years, with fossils dating back to the Late Cretaceous period.
- Primitive Fish:** They are considered "primitive" because they have retained many characteristics from their early ancestors.

Physical Characteristics

- **Distinctive Features:** Sturgeons are long-lived, late-maturing fishes with distinctive characteristics, such as a heterocercal caudal fin similar to those of sharks, and an elongated, spindle-like body that is smooth-skinned, scaleless, and armored with lateral rows of bony plates called scutes.
- **Size:** Several species can grow quite large, typically ranging from 2 to 3.5 meters in length.

Habitat and Behavior

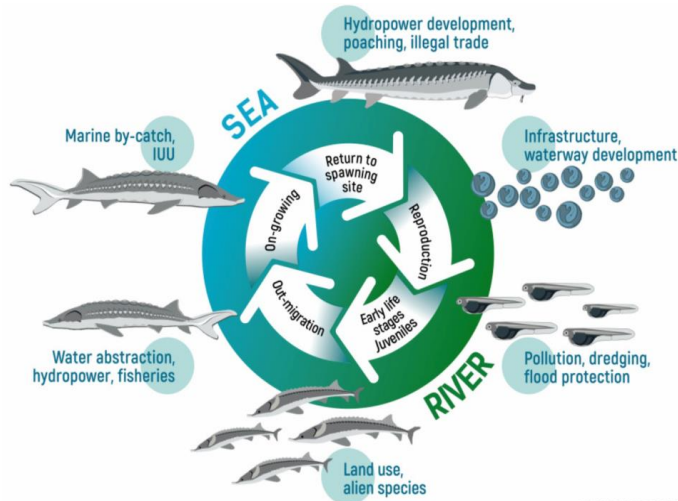
- **Habitat:** Sturgeons are found in subtropical, temperate, and sub-Arctic rivers, lakes, and coastlines of Eurasia and North America.

- **Migratory Patterns:** Many sturgeon species are anadromous, meaning they migrate upstream to spawn but spend most of their lives in river deltas and estuaries.

Additional Information

- Sturgeons are heavily exploited globally for their roe/eggs (caviar) and meat. This has led to a steep decline in populations worldwide.

- Due to overfishing for their roe (caviar) and habitat destruction, most sturgeon species are critically endangered

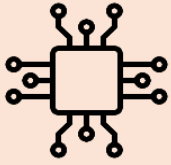


Generalised life cycle of sturgeon and the main threats impacting the various life stages

ILLUSTRATIONS: © A. GUBIG

- Since 1998, international trade in all species of sturgeons has been regulated under CITES owing to concerns over the impact of unsustainable harvesting of and illegal trade in sturgeon populations in the wild.

Source: [Down To Earth](#)



SCIENCE & TECHNOLOGY



CAR-T CELL

Context: A blood cancer patient recently got cured with the help of special treatment called Chimeric Antigen Receptor T (CAR-T) cell therapy.

Background:

- This advanced method helps fight cancer by using the patient's own immune system.

Key takeaways

- CAR-T cell therapy, chimeric antigen receptor T-cell therapy, is an **immunotherapy-based cancer treatment that uses the power of a patient's own immune system to fight cancer.**
- The immune system is the body's defence network against infections and diseases. **White blood cells (WBCs) play a pivotal role in the immune system.**

How does the immune system work

- **The immune system protects the body from infections using two main strategies:**
 - **Innate immunity** provides immediate, non-specific defence through barriers (skin, mucous membranes), phagocytic cells (neutrophils, macrophages), and inflammatory responses.
 - **Adaptive immunity involves lymphocytes** – a type of white blood cells. Adaptive immune responses are carried out by different classes of lymphocytes called B-cells and T-cells.
- **B-cells** (originate and mature in the bone marrow) produce antibodies targeting specific pathogens (antigens), while T-cells (originate in the bone marrow and mature in the thymus) destroy infected cells.
- Upon pathogen entry, the immune system **recognises antigens, activates immune cells, eliminates the threat, and forms memory cells for faster future responses.**

Why T-Cells

- **T-cells are primarily used in CAR-T cell therapy** because of their pivotal role in the immune system's response to pathogens. These cells can be genetically engineered to express chimeric antigen receptors (CARs), which are specifically designed to recognise and bind to antigens on the surface of cancer cells. Once bound, these modified T-cells can efficiently kill cancer cells.
- Other cells like **B cells also play roles in immunity** but don't have the same adaptability and memory capabilities as T cells.

Procedure

- The CAR-T cell therapy starts by collecting a patient's T-cells through a process called apheresis, which separates these cells from the blood. These T-cells are then sent to a lab where scientists modify them to add special receptors called chimeric antigen receptors (CARs).
- These receptors help the T-cells find and kill cancer cells. The modified T-cells are grown in large numbers before they are given back to the patient's bloodstream.
- It represents a form of personalised medicine, as the therapy is tailored to each individual's specific cancer.
- CAR-T cell therapies are also called "living drugs" because they use a patient's own living T-cells, genetically engineered to target and destroy cancer cells.

- These cells actively seek out, proliferate, and persist in the body, providing a dynamic and personalised defence against cancer, unlike traditional static drugs.

Source: [Indian Express](#)

METHANOTROPHS

Context: Researchers at MACS Agharkar Research Institute, under the Department of Science and Technology, have isolated and described the first indigenous methanotroph cultures in India.

Background:

- The discovery of native methane-eating bacteria in the country's rice fields and wetlands offers a promising natural solution to mitigate climate change and combat greenhouse gases

About methanotrophs :

- **Methanotrophs**, also known as **methanophiles**, are fascinating microorganisms that metabolize methane as their primary source of carbon and energy.
- They can be either bacteria or archaea and are capable of growing in both aerobic (with oxygen) and anaerobic (without oxygen) conditions.

Key Characteristics:

- **Metabolism:** Methanotrophs utilize methane, converting it into formaldehyde, which is then used to produce energy or assimilated into biomass.
- **Habitat:** These organisms are commonly found in environments where methane is produced, such as wetlands, soils, marshes, rice paddies, landfills, and aquatic systems like lakes and oceans.
- **Environmental Role:** Methanotrophs play a crucial role in reducing methane emissions to the atmosphere, thereby helping mitigate global warming

Applications:

- **Environmental:** Methanotrophs are being explored for their potential in bioremediation and wastewater treatment, where they can help reduce methane emissions.
- **Biotechnology:** They are also being studied for their ability to convert methane into valuable bioproducts, such as biofuels and bioplastics.

Source: [PIB](#)

NEUTRON STARS

Context: Astronomers recently discovered ten strange dead stars, or "neutron stars," lurking near the heart of the Milky Way.

Background:

- Neutron stars are one of the most extreme and exotic objects in the known universe.

About Neutron stars :

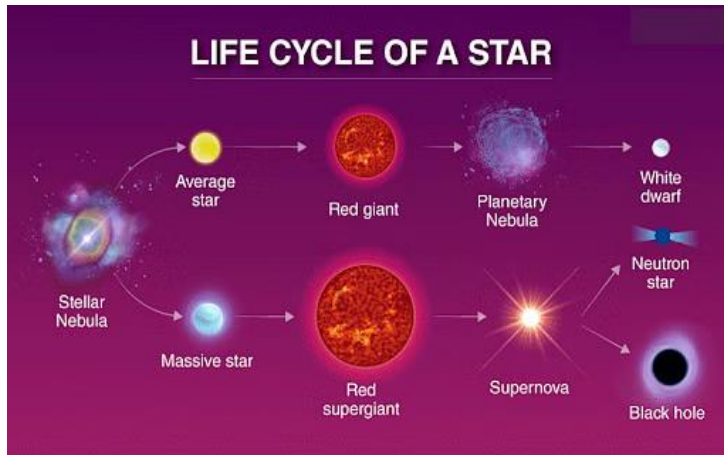
- They stars are the **collapsed cores of massive stars** that have undergone a supernova explosion.
- They are among the densest objects in the universe, second only to black holes.

How Are Neutron Stars Formed?

- **Supernova Explosion:** When a massive star (usually 10-25 times the mass of the Sun) exhausts its nuclear fuel, it can no longer support itself against gravitational collapse. This leads to a supernova explosion.

- **Core Collapse:** The core of the star collapses under gravity, causing protons and electrons to combine into neutrons. This process results in an incredibly dense core composed almost entirely of neutrons.
- **Formation of Neutron Star:** If the core's mass is between about 1 and 3 solar masses, the newly-created neutrons can halt further collapse, resulting in a neutron star. If the core's mass exceeds this limit, it will continue to collapse into a black hole.

Characteristics of Neutron Stars



- **Density:** Neutron stars are extremely dense. A sugar-cube-sized amount of neutron star material would weigh about a billion tons on Earth.
- **Magnetic Fields:** They have very strong magnetic fields, which can be billions of times stronger than Earth's magnetic field.
- **Rotation:** Neutron stars can rotate very rapidly, sometimes hundreds of times per second. These rapidly rotating neutron stars are known as pulsars.

- **Temperature:** Newly formed neutron stars can have surface temperatures of around 10 million K. Over time, they cool down, but even older neutron stars can still be quite hot.

Source: [Space](#)

DISTRIBUTED DENIAL-OF-SERVICE (DDoS) ATTACK

Context: A conversation between Republican presidential candidate Donald Trump and billionaire Elon Musk on Musk's social media platform X was disrupted by technical glitches, which Musk attributed to a DDoS attack.

Background:

- The conversation was highly anticipated, marking Trump's notable return to X after his 2021 ban from Twitter following the Capitol riots. Musk has strongly endorsed Trump as presidential candidate, so bringing the former president onto his platform for a conversation was a move that captured public attention.

Key takeaways:

- A Distributed Denial-of-Service (DDoS) attack is a **malicious attempt to disrupt the normal traffic of a targeted server, service, or network by overwhelming it with a flood of internet traffic.**

How DDoS Attacks Work

- **Botnets:** DDoS attacks are typically carried out using **networks of internet-connected devices (botnets) that have been infected with malware. These devices, often referred to as bots or zombies, are controlled remotely by the attacker.**
- **Traffic Flooding:** The attacker directs the botnet to send an overwhelming amount of traffic to the target's IP address. This can exhaust the target's bandwidth, RAM, or other resources, causing the system to slow down or crash.

Types of DDoS Attacks:

- **Volume-based attacks:** These aim to saturate the bandwidth of the target site.

- Protocol attacks: These focus on exploiting weaknesses in network protocols.
- Application layer attacks: These target specific applications or services.

Identifying a DDoS Attack

- A sudden slowdown or unavailability of a site or service is a common sign. Other indicators include unusual traffic patterns, such as spikes at odd hours or a flood of traffic from a single IP address.

Motivations Behind DDoS Attacks

- Financial Gain: Attackers may demand ransom to stop the attack.
- Competitor Sabotage: Businesses may use DDoS attacks to disrupt competitors.
- Hactivism: Individuals or groups may launch attacks to make a political statement.

Source:[Hindu](#)

BIOFORTIFIED CROPS

Context: Recently, the Prime Minister of India released 109 high yielding, climate resilient and biofortified varieties of crops at India Agricultural Research Institute, New Delhi

Background:

- The launch of these varieties represents a significant advancement in the government's effort to strengthen and future-proof Indian agriculture.

About Biofortification

- The process of improving the nutritional quality of food crops. This can be achieved through two main methods:
 - **Conventional Breeding:** This involves selecting and crossbreeding plants that naturally have higher levels of certain nutrients. Over time, this process enhances the nutrient content of the crops.
 - **Genetic Engineering:** This method involves directly modifying the plant's genes to increase the levels of specific nutrients.
- It aimed at developing and disseminating crops that are **naturally rich in essential micronutrients**, containing higher levels of vitamins, minerals, and other nutrients.
- **Benefits: Improved Nutrition and Accessibility**

Examples:

- **Golden Rice:** Enhanced with beta-carotene to address vitamin A deficiency.
- **Iron and Zinc-Enriched Wheat:** Developed through radiation breeding to improve iron and zinc content.

Source:[ICAR](#)

UNDERGROUND RESERVOIR OF LIQUID WATER ON MARS

Context: Scientists, analyzing seismic data from NASA's InSight lander, suggest that a vast reservoir of liquid water may exist deep beneath Mars' surface within fractured igneous rocks, potentially holding enough to cover the planet in a global ocean.

Background:

- The lander **measured seismic data over four years**, examining how quakes shook the ground and

determining what materials or substances were beneath the surface.

Key takeaways

- New seismic data from **NASA's Insights Lander** has discovered that a huge reservoir of liquid water may reside deep under the surface of Mars.
- Previous studies have established the presence of frozen water at Martian poles and the evidence that water vapour existed in its atmosphere. But this is the first time that liquid water has been found on the planet.
- Studies have found evidence of water channels and ripples which prove that rivers and lakes did exist on Mars in ancient times. But the planet has been a desert for three billion years as it lost all its water to sun after losing its atmosphere, a protective blanket to life or molecules on surface.
- As life cannot exist without water, the finding indicates the possibility of discovering habitable environments deep underground.

InSight Lander - Interior Exploration using Seismic Investigations, Geodesy and Heat Transport (InSight)

- It's **NASA Discovery Program** mission that placed a single geophysical lander on Mars to study its deep interior.
- It addressed one of the most fundamental issues of planetary science: understanding the processes that shaped the rocky planets of the inner solar system (including Earth) more than four billion years ago.
- Mission ended in December 2022, but the lander will continue to record seismic waves on the Mars surface for four years.

Source: [Hindustan Times](#)

STORM – 2035

Context: OpenAI recently said that it has banned ChatGPT accounts linked to an Iranian influence operation that used the chatbot to generate content to influence the U.S. presidential election.

Background:

- OpenAI downplayed the impact of operation, noting that the content did not engage much with audiences and was not widely shared.

About Storm-2035:

- Storm-2035 is a **covert Iranian influence operation identified by OpenAI, involving four websites posing as news organizations to target U.S. voters.**
- The websites **exploited issues like LGBTQ rights and Israel-Hamas conflict** and also used AI tools to plagiarise stories and capture web traffic
- AI chatbots such as ChatGPT can potentially assist foreign operatives fool internet users by mimicking American users' language patterns, rehashing already existing comments or propaganda, and cutting down the time it takes to create and circulate plagiarised content meant to sway voters.
- Apart from the upcoming U.S. presidential election, the operation covered global issues like Venezuelan politics, Latin rights in the U.S., the situation in Palestine, Scottish independence, and Israel's participation in the Olympic Games. It also exploited popular topics such as fashion and beauty.

Impact of Storm-2035:

- As per Brookings' BreakoutScale, which measures the impact of covert operations on a scale from 1

(lowest) to 6 (highest), this operation was at the low end of Category 2, meaning it was posted on multiple platforms, but there was no evidence that real people picked up or widely shared their content.

Previous Incidents:

- In May, OpenAI posted a report revealing it had been working to dismantle covert influence operations that used its tools for generating comments on social media, articles in multiple languages, fake names and bios for social media accounts, and translating or proofreading text.
- A Russian outfit that OpenAI called 'Bad Grammar,' used the Telegram to target Ukraine, Moldova, the Baltic States and the U.S.

OpenAI's Response:

- OpenAI has developed AI-powered security tools to detect threats more quickly and has strengthened its safeguards against malicious use of its technology.
- The company is also collaborating with U.S. federal agencies and experts, including the U.S. AI Safety Institute, to enhance the security and reliability of its AI models.

Source: [Indian Express](#)

PROKARYOTES

Context: Scientists have found that prokaryotes are remarkably resilient to climate change – and as a result, could increasingly dominate marine environments

Background:

- Prokaryotes are thought to be the oldest cell-based lifeforms on Earth. They thrive across the entire planet – on land and in water, from the tropics to the poles.

Key takeaways:

- A prokaryote is a **single-cell organism whose cell lacks a nucleus and other membrane-bound organelles**. They are classified into two domains: Bacteria and Archaea.

What the research says

- Prokaryotes make up **30% of oceanic life**. These tiny creatures, including bacteria and archaea, play a vital role in maintaining the balance of marine ecosystems.
- Prokaryotes are remarkably resilient to climate change. As a result, they could increasingly dominate marine environments, potentially disrupting food chains and reducing the availability of fish that humans rely on for food. Additionally, this shift could hinder the ocean's ability to absorb carbon emissions, exacerbating global warming.
- This carbon output is typically balanced by phytoplankton, which use photosynthesis to convert sunlight and carbon dioxide into energy. Phytoplankton and other ocean processes also absorb up to one-third of the carbon humans release into the atmosphere each year. This helps limit the pace of global warming.
- Present research shows that for every degree of ocean warming, there will be 1.5% decline in prokaryote biomass, which is significantly less than the 3-5% decline projected for larger plankton, fish, and mammals. This could lead to marine ecosystems increasingly dominated by prokaryotes, diverting nutrients and energy away from fish and reducing the supply of seafood for human consumption.
- We also discovered that for each degree of warming, prokaryotes in the upper 200 meters of the ocean could produce an additional 800 million tonnes of carbon annually.

- Moreover, current projections of declining global fish stocks may underestimate the impact of climate change, as they often don't account for how warming could reshape marine food webs in favor of prokaryotes. These declines in fish populations pose a significant threat to global food security, as the oceans are a primary source of protein for about 3 billion people.

Source: [Hindu](#)

NATIONAL PEST SURVEILLANCE SYSTEM (NPSS)

Context: The Union Government recently launched the AI-based National Pest Surveillance System (NPSS).

Background:

- This initiative is expected to benefit around 14 crore farmers across India, helping to increase productivity and reduce the excessive use of pesticides.

About National Pest Surveillance System (NPSS)

- It's a digital initiative by the **Ministry of Agriculture and Farmers Welfare**.
- It leverages Artificial Intelligence (AI) and Machine Learning (ML) to provide timely pest management advisories to farmers across India.
- This system **aims to reshape pest management** practices and empower farmers by reducing their reliance on pesticide retailers and fostering a scientific approach to pest control.

Key Features of NPSS:

- **User-Friendly Access:** Comprises a mobile app and a web portal, ensuring accessibility for all farmers.
- **Real-Time Data and Analytics:** Utilizes real-time data and advanced analytics for accurate pest identification, monitoring, and management.
- **Quick Solutions:** Provides quick solutions to pest attacks and crop diseases, reducing crop losses and improving productivity.
- **Actionable Insights:** Offers comprehensive pest incidence data and automated advisories, empowering farmers with actionable insights for informed decision-making and proactive crop protection measures.

Source: [Hindu](#)

VACCINE DERIVED POLIO

Context: A two-year-old child in Meghalaya has been infected with vaccine-derived polio.

Background:-

- Polioviruses are enteroviruses that are transmitted primarily by the faecal-oral route.

Vaccine-Derived Polio (VDP):

- VDP 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.**
- **Mechanism:**
 - OPV contains a live, attenuated virus that is used for immunisation against the disease. This weakened virus triggers an immune response when administered, thus protecting people from the disease.
 - The attenuated virus replicates in the intestines for a limited period and is excreted in the

stool. In rare cases, the virus can mutate enough to cause the disease again, and circulate in areas where either immunisation is low, or where immunocompromised persons reside, or regions with poor sanitation and hygiene.

- **Poliovirus Types: Three types** – wild poliovirus type 1 (WPV1), wild poliovirus type 2 (WPV2) and wild poliovirus type 3 (WPV3).

About polio vaccines

- The first successful polio vaccine for poliovirus was made by Jonas Salk, in the early 1950s.
- After Salk, Albert Sabin developed another vaccine that contained live polio strains, weakened by growing them serially in macaque cells, making them unfit for human infection. Since this vaccine contained the live virus, it had to be administered through its natural mode of infection – in this case, oral. This is what we today know as the OPV.
- OPV is usually preferred over IPV because of its ease of administration & is inexpensive. However, the weakened virus in OPV can occasionally revert, causing the disease it is meant to prevent. IPV, on the other hand, is a less potent vaccine, but contains inactivated virus particles and hence no risk of causing vaccine-associated paralytic polio (VAPP) – a rare, adverse reaction to OPV. IPV is comparatively tougher to manufacture too.
- Vaccine-associated paralytic polio (VAPP) or vaccine-derived poliovirus (VDPV) are similar but different phenomena.
- However, more than 90% of vaccine-derived poliovirus outbreaks are due to the type 2 virus present in oral polio vaccines. VAPP constitutes 40% of cases caused by the type 2 oral polio vaccine. Many cases of VAPP from type 3 virus too occur in countries using OPV.
- The Indian government does not count VAPP as polio since these cases are sporadic and pose little or no threat to others.
- Even after the global switch from trivalent (containing all three variants) to bivalent (type 1 and type 3) oral polio vaccines in 2016 to prevent any more type 2 vaccine-derived poliovirus, the number of vaccine-derived type 2 poliovirus outbreaks have only increased sharply.

Source: [Hindu](#)

PARVOVIRUS B19

Context: The US centres for Disease Control and Prevention (CDC) recently issued a health advisory due to concerning rise in cases of parvovirus B19.

Background:

- The advisory highlights the importance of screening high-risk patients and taking preventive measures to reduce the spread.

About parvovirus B19.

- Parvovirus B19 is a small DNA virus which is also known as “slapped cheek” disease or fifth disease, is a highly contagious virus that primarily affects children but can also impact adults.

Transmission

- **Spread:** The virus spreads through respiratory droplets when an infected person coughs or sneezes. It can also be transmitted through blood transfusions and from a pregnant woman to her foetus.
- **Contagiousness:** Highly contagious, especially in environments like schools and daycare centers.

Symptoms

- **Children:** Bright red rash on the cheeks, sometimes accompanied by a lacy red rash on the body and limbs.
- **Adults:** Joint pain and swelling, particularly in the wrists, knees, and ankles. Some adults may also experience mild flu-like symptoms.
- **Immunocompromised Individuals:** Can suffer from severe anaemia due to the virus's impact on red blood cell production.
- **Pregnancy:** Infection during pregnancy can lead to severe complications such as hydrops fetalis and miscarriage.

Diagnosis and Treatment

- **Diagnosis:** Typically made based on clinical presentation and confirmed by serologic testing for Parvovirus B19-specific antibodies. PCR testing can also detect the virus's DNA.
- **Treatment:** No specific antiviral treatment. Currently, there is no vaccine available for Parvovirus B19. Preventive measures focus on reducing transmission. Management focuses on alleviating symptoms, such as using antipyretics and analgesics for children and NSAIDs for adults.

Prevention

- **Hygiene:** Good hand hygiene practices, such as regular hand washing with soap and water.
- **Avoiding Contact:** Avoiding close contact with individuals who exhibit symptoms of the infection.
- **Pregnancy Precautions:** Pregnant women should take precautions to avoid exposure to infected individuals.

Source: [CDC](#)

CHANDRAYAAN 3 MISSION

Context: Today, India is celebrating its first National Space Day. This day commemorates the groundbreaking success of the Chandrayaan-3 mission, which achieved the safe landing of the Vikram Lander on the lunar surface on August 23, 2023.

Background:-

- With Chandrayaan-3 mission achievement, **India became the fourth country to successfully land on the moon**, making history as the first to land near the southern polar region.

Chandrayaan-3 Mission

- **Mission Type:** India's third lunar mission and second attempt at a soft lunar landing.
- **Launch Vehicle:** Launch Vehicle Mark-III (LVM3).
- **Primary Objectives:**
 - Demonstrate a safe and soft landing on the lunar surface.
 - Demonstrate a rover roving on the Moon.
 - Conduct in-situ scientific experiments.
- **Chandrayaan-3 Components:**
 - Lander Module (LM)

- o Rover
- o Propulsion Module (PM)

Lander Payloads and Objectives

- **Chandra's Surface Thermophysical Experiment (ChaSTE):** Measures the thermal properties of the lunar surface near the polar region.
- **Instrument for Lunar Seismic Activity (ILSA):** Measures seismic activity around the landing site and analyzes the lunar crust and mantle structure.
- **Radio Anatomy of Moon Bound Hypersensitive Ionosphere and Atmosphere (RAMBHA):** Estimates plasma density and its variations.
- **Laser Retroreflector Array (LRA):** A passive experiment to understand the dynamics of the Moon's system.

Rover Payloads and Objectives

- **Alpha Particle X-ray Spectrometer (APXS):** Determines the elemental composition of lunar soil and rocks.
- **Laser-Induced Breakdown Spectroscopy (LIBS):** Analyzes elemental composition in the vicinity of the landing site.

Propulsion Module Payload

- **Propulsion Module Payload:** Spectro-polarimetry of Habitable Planet Earth (SHAPE) for studying Earth's spectral and polarimetric measurements from lunar orbit.
- SHAPE will aid in the study of exoplanets to assess their potential habitability.

Significance of Chandrayaan-3

- **Cost Efficiency:** Demonstrates ISRO's ability to achieve space missions cost-effectively (Mission cost: Rs 615 crore).
- **Technological Leadership:** Establishes India among the few nations with the capability for planetary exploration, contributing to space-related decision-making.

Source: [Indian Express](https://www.indianexpress.com)

RHUMI - 1

Context: India has successfully launched its first reusable hybrid rocket, RHUMI-1.

Background: The launch took place from Thiruvudandhai in Chennai.

About RHUMI- 1

- RHUMI-1 is **India's first reusable hybrid rocket**, launched by a Tamil Nadu-based startup called Space Zone India.
- The mission is **led by Anand Megalingam from Space Zone India** under the guidance of Dr. Mylswamy Annadurai, former Director of ISRO Satellite Centre (ISAC).It is capable of reaching altitudes between 1km and 500km.

Hybrid Propulsion System:

- RHUMI-1 stands out for its **innovative hybrid propulsion system, which combines the advantages of both liquid and solid fuels.**
- This technology promises improved efficiency and reduced operational costs, making space exploration more accessible.

Ecofriendly feature:

- RHUMI-1 is equipped with a CO₂-triggered parachute system. This is an eco-friendly and cost-effective method that ensures the safe recovery of rocket components post-launch.

- Beyond space exploration, the applications of RHUMI-1 extend to sectors like agriculture, disaster management, and environmental monitoring.

Environmental Impact:

- RHUMI-1's reusability reduces the financial burden of space exploration and minimizes its environmental impact.

Source: [New Indian Express](#)

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HISTORY AND ART & CULTURE



HUMAYUN'S TOMB

Context: Union Minister of Culture and Tourism recently inaugurated the sprawling 100,000 square feet state of the art – Humayun's Tomb World Heritage Site Museum at the Humayun's Tomb, a UNESCO World Heritage site in New Delhi.

Background:

- Inspired from the ancient 'Baolis' or stepped wells of Delhi, this underground museum is designed to retain the visual integrity of the monuments located in the complex, as per the UNESCO recommendation that site museums be provided at World Heritage Sites to provide the cultural context of the heritage edifice.

About Humayuns tomb



- Humayun's tomb is the **tomb of Mughal emperor, Mirza Nasir al-Din Muhammad commonly known as Humayun situated in Delhi, India.**

- **Commissioned by:** The tomb was commissioned by Humayun's first wife and chief consort, Empress Bega Begum, in 1558.

- **Architects:** It was designed by Persian architects Mirak Mirza Ghiyas and his son, Sayyid Muhammad.
- **Architecture:** Humayun's Tomb is notable for being the first garden-tomb on the Indian subcontinent and the first structure to use red sandstone at such a scale. It features high arches and double domes, showing considerable Persian influence.
- **UNESCO World Heritage Site:** The tomb was declared a UNESCO World Heritage Site in 1993.
- **Location:** It is situated in Nizamuddin East, Delhi, near the Dina-panah Citadel, also known as Purana Qila.
- **Significance**
 - The complex encompasses the main tomb of the Emperor Humayun, which houses the graves of Empress Bega Begum and also Dara Shikoh, great-great-grandson of Humayun and son of the later Emperor Shah Jahan, as well as numerous other subsequent Mughals.
 - Along with its expertly designed Charbagh garden, which was characteristic of Persian gardens but unprecedented in India, it set a new standard for subsequent Mughal architecture.
 - The site was chosen on the banks of the Yamuna River due to its proximity to Nizamuddin Dargah, the mausoleum of the celebrated Sufi saint Nizamuddin Auliya, who was revered by the rulers of Delhi. His residence, Chilla Nizamuddin Auliya, is located just northeast of the tomb.

Source: [PIB](#)

KAKORI TRAIN ROBBERY

Context: This year marks the centenary of the Kakori case, also known as the Kakori train robbery. On Friday, August 9, Uttar Pradesh Chief Minister Yogi Adityanath inaugurated the 100th-anniversary

celebrations.

Background:-

- The incident shook the British government and accelerated the freedom movement.

Kakori Train Robbery: An Overview

- Occurred on August 9, 1925, near Kakori, a railway station approximately 20 km from Lucknow.
- **The Event:**
 - Ten revolutionaries boarded the Saharanpur-Lucknow passenger train at Kakori station.
 - Shortly after departure, they pulled the chain to stop the train at Bajnagar, a village 2 km away.
 - They looted funds intended for the British treasury being transported by rail.
- **Involvement of Hindustan Republican Association (HRA):**
 - This was the first major action by the HRA, a revolutionary group formed in 1924.
 - Key members included Ram Prasad Bismil, Ashfaqullah Khan, Sachindra Nath Bakshi, and Chandrashekhar Azad, among others.
- **Execution & Aftermath:**
 - Ram Prasad Bismil, who hatched the robbery plan, was joined in its execution by Ashfaqullah Khan, Rajendra Lahiri, Chandrashekhar Azad, Sachindra Nath Bakshi, Keshab Chakravarty, Manmathnath Gupta, Murari Sharma, Mukundi Lal and Banwari Lal.
 - A passenger was accidentally killed when a Mauser gun went off, complicating their mission.
- **Trial & Sentences:**
 - Of the accused who were made to stand trial at the Special Sessions Court of Justice Archibald Hamilton, 19 persons were convicted.
 - Four were sentenced to death: Ram Prasad Bismil, Roshan Singh, Rajendra Lahiri, and Ashfaqullah Khan.
 - Others received various sentences, including deportation to the Cellular Jail in Port Blair.
 - On December 17, 1927, Lahiri was hanged at Gonda jail. On December 19, 1927, Ashfaqullah, Roshan and Bismil too were put to death — Ashfaqullah at Faizabad jail, Roshan at Naini (Allahabad) jail and Bismil at Gorakhpur jail.
- **Ram Prasad Bismil's Arrest & Legacy:**
 - Bismil was arrested in October 1925, supposedly after two members of the HRA betrayed him.
 - He famously recited the ghazal "Sarfarooshi ki tamanna" while being led to the gallows, which became an iconic anthem for freedom fighters.
- **Chandrashekhar Azad:**
 - Chandrashekhar Azad was the only major revolutionary associated with the HRA who

evaded arrest.

- o He shot himself dead in Allahabad's Alfred Park (now Chandrashekhar Azad Park) on February 27, 1931.

- **Impact on the British Raj:**

- o The Kakori incident was a symbolic defiance against British rule, which led to harsh punishments to deter future revolutionaries.

- **Defence lawyers who became CMs:**

- o Prominent lawyers who defended the accused, including Govind Ballabh Pant and Chandra Bhanu Gupta, went on to become the first and third Chief Ministers of Uttar Pradesh.

Source: [Indian Express](#)

GEOGLYPHS

Context: The Maharashtra government has officially designated the ancient geoglyphs and petroglyphs in Ratnagiri as “**protected monuments**” under the Maharashtra Ancient Monuments and Archaeological Sites and Remains Act, 1960.

Background: These remarkable artifacts date back to the Mesolithic era and depict various animals.



Key takeaways

- A geoglyph refers to a design that is drawn on the earth, typically formed of durable elements of the landscape, such as stones, gravel, or earth.
- A geoglyph is usually longer than four metres.
- Geoglyphs are difficult to see or even identify on the ground but are easily appreciated when seen from the sky.

Different types of Geoglyphs:

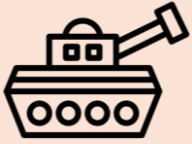
- **Positive Geoglyphs:** These are created by arranging and aligning materials on the ground to form specific shapes or patterns. Petroforms, which use boulders or stones, fall into this category. Positive geoglyphs can be quite intricate and are often best appreciated from an aerial perspective.
- **Negative Geoglyphs:** In contrast, negative geoglyphs involve removing part of the natural ground surface to create distinct patterns. Similar to petroglyphs (which are carvings on rock surfaces), negative geoglyphs reveal differently coloured or textured ground. They can be found in various landscapes around the world.
- **Arborglyphs:** These unique geoglyphs rely on living plants. By carefully seeding and nurturing specific vegetation, people create designs that become visible over time. The patience required for arborglyphs is remarkable, as the design gradually emerges as the plants grow.
- **Chalk Giants:** These geoglyphs are carved into hillsides, exposing the underlying bedrock. The Uffington White Horse and the Cerne Giant in southern England are excellent examples of chalk

giants.

Petroglyphs

- Petroglyphs are fascinating rock carvings created by removing part of a rock surface through incising, pecking, carving, or abrading.
- These ancient images hold cultural and religious significance for the societies that made them.

Source: [Times of India](#)



DEFENCE & SECURITY



INS ARIGHAAT

Context: India bolstered its deterrence capability on Thursday with the commissioning of its second nuclear submarine, INS Arighaat, into the Navy.

Background: -

- The discreet commissioning ceremony of the Arihant-class vessel in Visakhapatnam was attended by Defence Minister Rajnath Singh.

Key takeaways

- INS Arighaat will join its predecessor INS Arihant strengthening the country's nuclear triad — the ability to fire nuclear missiles from platforms in the air, land and sea.
- Like INS Arihant, it is powered by 83 MW pressurised light-water reactors which allows it to remain submerged for longer periods when compared to conventional submarines.

INS Arihant Project

- The INS Arihant project was initiated over three decades ago, **involving Russian assistance, private companies and the research establishment.**
- The lead vessel of the Arihant class, INS Arihant, was laid down in 2004, launched in 2009, and commissioned into the Navy in 2016. It was the **first ballistic missile submarine built by a country outside the United Nations Security Council's five.**

Additional Information

- A robust, survivable and assured retaliatory capability is in line with India's policy to have a credible minimum deterrence capacity to underpin its 'no first use' commitment.
- In 2003, India declared its nuclear doctrine, reserving the right of massive retaliation if it is struck with nuclear weapons.

Source: [Indian Express](#)

AAROGYA MAITRI HEALTH CUBE

Context: The Indian Air Force (IAF) and Indian Army have successfully conducted their first precise para-drop operation of the Aarogya Maitri Health Cube at a high-altitude area near 15,000 feet.

Background:

- The operation aligns with Prime Minister Narendra Modi's vision of delivering critical supplies to areas affected by humanitarian aid and disaster relief (HADR).

About Aarogya Maitri Health Cube

- It's a state-of-the-art **mobile hospital developed by the Indian Air Force (IAF).**
- It is developed under the broader **BHISHM initiative** (Bharat Health Initiative for Sahyog, Hita, and Maitri).
- This innovative solution is designed to **provide rapid medical assistance** in disaster-stricken areas.

Key Benefits:

- **Advanced Medical Care:** Equipped with state-of-the-art medical equipment, including operation theatres, X-ray machines, blood test equipment, and ventilators, ensuring comprehensive medical care.
- **High Capacity:** Capable of treating up to 200 casualties simultaneously, making it suitable for large-scale emergencies.
- **Flexibility and Mobility:** The 72 lightweight, transportable components can be easily moved by hand, cycle, or drone, allowing for deployment in remote or hard-to-reach areas.
- **AI and Data Analytics Integration:** Enhances coordination and real-time monitoring, improving the efficiency and effectiveness of medical response.
- **Robust and Waterproof Design:** Ideal for various emergency situations, including those in challenging environments.

Source: [Hindu](#)

EXERCISE UDARA SHAKTI 2024

Context: Recently, the Indian Air Force and Royal Malaysian Air Force participated in Exercise Udara Shakti 2024.

Background:

- It was held from August 5-9, 2024, at the RMAF base in Kuantan, Malaysia.

Key takeaways:

- Exercise Udara Shakti 2024 is a significant **bilateral air force exercise between the Indian Air Force (IAF) and the Royal Malaysian Air Force (RMAF)**.
- Aim: enhance military cooperation and strengthen the strategic partnership between India and Malaysia.
- 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.

What other joint exercises have India participated in?

- **Mitra Shakti:** This is an annual exercise with Sri Lanka, focusing on counter-insurgency and counter-terrorism operations. The latest edition began on August 12, 2024, in Sri Lanka.
- **Yudh Abhyas:** A joint military exercise with the United States, aimed at improving interoperability and sharing best practices in counter-terrorism operations.
- **Hand-in-Hand:** Conducted with China, this exercise focuses on counter-terrorism and humanitarian assistance and disaster relief operations.
- **Indra:** A series of joint exercises with Russia, covering all three services (Army, Navy, and Air Force) to enhance bilateral defence cooperation.
- **Shakti:** A biennial exercise with France, focusing on counter-terrorism operations and enhancing interoperability between the two armies.
- **Nomadic Elephant:** Conducted with Mongolia, this exercise focuses on counter-insurgency and counter-terrorism operations.

Source: [PIB](#)



HEALTH



ACUTE ENCEPHALITIS SYNDROME (AES)

Context: Recently, there has been a sharp increase in Acute Encephalitis Syndrome (AES) cases in Gujarat.

Background: Ahmedabad city alone has reported 12 AES cases, with half of them resulting in fatalities. Health officials are closely monitoring the situation, and measures are being taken to manage and investigate the outbreak.

About Acute Encephalitis Syndrome (AES)

- A severe form of encephalitis caused **primarily by mosquito-borne viruses, characterized by high fever and brain inflammation.**
- It's an umbrella term used for infections that cause inflammation, irritation, or swelling in the brain.
- **It is characterized by an acute onset of fever and clinical neurological manifestations** such as mental confusion, disorientation, delirium, convulsions, or coma.
- Can be caused by **Japanese encephalitis virus (JEV)** or other infectious and non-infectious factors.
- Encephalitis can sometimes lead to death and getting diagnosed and treated right away is important because it's hard to predict how encephalitis may affect each person.

Causes of encephalitis:

- When inflammation is caused by an infection in the brain, it is known as **infectious encephalitis**. And when it is caused by the immune system attacking the brain, it known as **autoimmune encephalitis**. Sometimes there is no known cause.
- World Health Organisation (WHO) introduced the term AES to denote a group of similar diseases.

How can AES be prevented?

- Vaccination and Proper sanitation facilities
- Increasing access to safe drinking water
- Improve the nutritional status of children who are at risk of AES
- Preventive measures should be directed at reducing the overall mosquito density
- The transmission risk increases when animal sheds (especially piggeries) and human dwellings are situated very close to each other.

Vaccination:

- As per the guidelines of the Government of India, **two doses of the JE/AES vaccine have been approved to be given. One with the measles vaccine at 9 months of age and the second with the DPT booster at 16-24 months of age.**

Source: [WHO](#)

ANEMIA MUKT BHARAT

Context:The Ministry of Health and Family Welfare recently released details of the Anemia Mukh Bharat initiative.

Background:

- Anaemia is a significant public health challenge in India.

Key takeaways:

- Anemia is a problem of **not having enough healthy red blood cells or hemoglobin to carry oxygen to the body's tissues**. Hemoglobin is a **protein found in red cells** that carries oxygen from the lungs to all other organs in the body.
- **There are many forms of anemia:** Aplastic anemia, Iron deficiency anemia, Sickle cell anemia, Thalassemia, Vitamin deficiency anemia.
- Iron deficiency anaemia **results in impaired cognitive and motor development in children and decreased work capacity in adults**. The effects are most severe in infancy and early childhood.
- In pregnancy, iron deficiency anaemia can lead to perinatal loss, prematurity and low birth weight (LBW) babies.
- **Anemia Mukh Bharat strategy is implemented to reduce anaemia among six beneficiaries age group** - children (6-59 months), children (5-9 years), adolescents (10-19 years), pregnant and lactating women and in women of reproductive age group (15-49 years) in life cycle approach through implementation of six interventions via six robust institutional mechanisms.

The six interventions under Anemia Mukh Bharat strategy are as follows:

1. Prophylactic Iron Folic Acid Supplementation
2. Periodic deworming
3. Intensified year-round Behavior Change Communication Campaign
4. Testing of anemia using digital invasive haemoglobinometer and point of care treatment.
5. Mandatory provision of Iron and Folic Acid fortified foods in government-funded health programmes.
6. Intensifying awareness, screening and treatment of non-nutritional causes of anaemia in endemic pockets, with special focus on malaria, haemoglobinopathies and fluorosis.

Source:[PIB](#)

AYUSHMAN BHARAT SCHEME

Context: Beneficiaries aged 70 years and above made up over 12 percent of all admissions under the government's flagship Ayushman Bharat health insurance scheme, with their treatment costs accounting for nearly 14 percent of the total expenditure till January, according to data presented in Parliament by the Union Ministry of Health and Family Welfare.

Background:

- India's population over the age of 60 years is estimated to increase from 8.6 per cent in 2011 to 19.5 per cent by 2050. Health coverage is crucial for older age group.

Ayushman Bharat Pradhan Mantri — Jan Arogya Yojana (AB PM-JAY):

- Ayushman Bharat, a flagship scheme of the Government of India, was **launched as recommended by the National Health Policy 2017**, to achieve the vision of **Universal Health Coverage (UHC)**.
- This initiative has been designed to meet SDG's and its underlining commitment, which is to "leave

no one behind.”

- It is the world’s largest health insurance scheme fully financed by the government.
- It is an entitlement-based scheme that targets the beneficiaries as identified by the latest **Socio-Economic Caste Census (SECC) data**.
- **The National Health Authority (NHA)** has been constituted as an autonomous entity under the Society Registration Act of 1860 for the effective implementation of PM-JAY in alliance with state governments.

Objectives of AB-PMJAY:

- To reduce the financial burden of **out-of-pocket expenditure (OOPE)** on healthcare for the beneficiaries.
- To improve the access and affordability of healthcare services for the beneficiaries.
- To enhance the quality and efficiency of healthcare delivery systems in the country.
- To promote preventive, promotive, and curative health interventions for the beneficiaries.

Provisions/Features of AB-PMJAY:

- It is a centrally sponsored scheme where the funding ratio is 60:40 for most states, 90:10 for northeastern states and Himalayan states, and 100:0 for union territories without a legislature.
- It provides a health cover of Rs 5 lakh per family per year for secondary and tertiary care hospitalization to more than 12 crore families.
- It covers medical and surgical procedures for almost all health conditions through a comprehensive list of 1,949 packages, including cancer care, cardiac care, neurosurgery, orthopaedics, burns management, mental disorders, etc.
- It has a network of more than 27,000 empanelled hospitals across the country, out of which more than half are private hospitals.
- It has a dedicated workforce of Pradhan Mantri Arogya Mitras (PMAMs) who guide and assist the beneficiaries at every step of their journey under the scheme. They are responsible for beneficiary verification, registration, pre-authorisation, claim submission, etc.
- It has a National Anti-Fraud Unit (NAFU) that designs, implements, and oversees anti-fraud initiatives.

Issues/Challenges faced by AB-PMJAY:

- It faces a low awareness level among the potential beneficiaries, especially in rural areas.
- There is an uneven distribution and availability of healthcare infrastructure and human resources in the country which results in a supply-side constraint.
- It faces the challenge of ensuring timely and adequate reimbursement of claims to empanelled hospitals, especially private ones.

Source: [Indian Express](#)

GST ON HEALTH INSURANCE

Context: Insurance companies have increased premiums on health and life policies this year, and with the 18% GST, insurance has become less affordable for many people.

Background:

- Opposition leaders, including Rahul Gandhi, recently protested, demanding the withdrawal of GST

on life and health insurance premiums.

What is the GST on health and life insurance premiums?

- GST replaced all indirect taxes like service tax and cess from July 1, 2017. Currently, GST on health and life insurance policies is fixed at 18%.
- Since GST encapsulates service tax, which applies to the insurance industry, its introduction has resulted in an increase in premium amounts.
- Prior to GST, life insurance premiums were subject to 15% service taxes, comprising Basic Service Tax, Swachh Bharat cess, and Krishi Kalyan cess. The increase from 15% to 18% impacted the policyholders — by raising their premiums amounts.
- This, along with medical inflation, which was estimated to be 14% towards the end of last year — has made buying medical insurance difficult for many people. Same is the case with term insurance policies.
- The government acknowledged recently that representations had been received asking for an exemption or reduction in the rate of GST on life and health insurance.

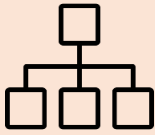
Rationale for Imposing GST on Insurance Premiums:

- GST applies to all insurance policies as they are considered services, and policyholders must pay tax on their premiums.
- This tax is a significant revenue source for the government, generating Rs 21,256 crore over the last three financial years and an additional Rs 3,274 crore from health policy renewals.
- Insurance policies allow certain tax deductions under the Income Tax Act, 1961. Sections 80C and 80D are particularly popular.
 - o **Section 80C:** Allows deductions of up to Rs 1.5 lakh on the overall insurance premium, including GST.
 - o **Section 80D:** Offers additional deductions if customers opt for a medical rider with their life insurance policies.

Argument for withdrawing the GST on the premium

- Main issue is the large increases in premium on health insurance policies.
- Renewal rate of policies is alarmingly declining due to frequent premium hikes.
- **GST on insurance in India is the highest in the world** — and that the situation needs to be addressed in order to attain insurance regulator IRDAI's goal of "Insurance for All by 2047"

Source: [Indian Express](#)

*GOVT. INITIATIVES, SCHEMES AND POLICIES, ORGANISATION***SEXUAL HARASSMENT ELECTRONIC BOX (SHe-Box)**

Context: Union Ministry of Women and Child Development recently launched the new SHe-Box portal.

Background: This initiative is a critical step towards creating a safer and more inclusive working environment for women in India.

About Sexual Harassment electronic Box (SHe-Box)

- SHe-Box is an effort of Government of India to provide a single window access to every woman, irrespective of her work status, whether working in organised or unorganised, private or public sector, to facilitate the registration of complaint related to sexual harassment.
- Any woman facing sexual harassment at workplace can register their complaint through this portal. Once a complaint is submitted to the 'SHe-Box', it will be directly sent to the concerned authority having jurisdiction to take action into the matter.

Key Features:

- **Centralized Platform:** It provides a single window for women to register and monitor complaints of sexual harassment, regardless of their work status (organized or unorganized, public or private sectors).
- **Repository of Information:** The portal serves as a centralized repository for information related to Internal Committees (ICs) and Local Committees (LCs) formed across the country.
- **Complaint Filing and Tracking:** Women can file complaints, track their status, and ensure time-bound processing by ICs. The portal ensures that complaints are processed efficiently and transparently.
- **Assured Redressal:** The portal offers a streamlined process for all stakeholders, ensuring that complaints are addressed promptly and effectively.
- **Real-Time Monitoring:** A designated nodal officer monitors the complaints and their investigation progress in real-time, ensuring accountability and timely action.
- **Privacy Protection:** Complaints can be registered safely without personal information being publicly accessible, ensuring the complainant's privacy and security.
- **Access and Usage:** The SHe-Box portal can be accessed at <https://shebox.wcd.gov.in/>. To register a complaint, a valid email ID and mobile number are required.

The Sexual Harassment at Women at Workplace (Prevention, Prohibition and Redressal) Act, 2013

- **Objective:** to create a safe and secure workplace for women free from sexual harassment.
- This Act is unique in its broad coverage which includes all women irrespective of their work status, whether working in organised or unorganised, public or private sectors, regardless of hierarchy. The domestic workers are also included within its ambit.
- It defines sexual harassment at the workplace in a comprehensive manner, to cover circumstances of implied or explicit promise or threat to a woman employment prospects or

creation of hostile work environment or humiliating treatment, which can affect her health or safety.

Source: [Times of India](#)

NATIONAL COUNCIL OF APPLIED ECONOMIC RESEARCH (NCAER)

Context: Monthly Economic Review of the National Council of Applied Economic Research (NCAER) for August acknowledges that the domestic economy remains resilient.

Background: However, it highlighted moderation in certain high-frequency indicators, such as industrial output and core sectors' performance in June.

Key takeaways

- The National Council of Applied Economic Research (NCAER) is India's oldest and largest independent, non-profit economic policy research think tank. NCAER was established in 1956 in New Delhi.
- Its mission is to provide research-based policy solutions that help understand India's rapid economic and social transformation as new and complex challenges emerge.

Research Themes:

- National Growth and Macroeconomic Center: Analyzing growth trends and macro policies.
- Human Development and Data Innovation: Focusing on education, health, and data-driven insights.
- Investor Education and Protection Fund Chair Unit: Enhancing financial literacy and investor protection.
- Trade, Technology, and Skills: Addressing trade dynamics and skill development.
- Agriculture and Rural Development: Supporting sustainable rural growth.
- Centre for Health Policy and Systems: Advancing health policy research.

NCAER's contributions to Indian Economy:

- **Rich Data and Evidence:**
 - NCAER gathers evidence through scientific surveys, panel surveys, and data collection.
 - This rich data serves as a foundation for informed policy decisions, enabling evidence-based reforms and targeted interventions.
- **Economic Analysis and Modelling:**
 - NCAER estimates demand, supply, income, investment, savings, and conducts macroeconomic modelling and forecasting.
 - These analyses provide insights into economic trends, growth drivers, and potential policy impacts.
- **Policy Research and Forums:**

- o NCAER hosts unique platforms for discussions, bringing together policymakers, industry leaders, and experts.
- o These forums facilitate dialogue on critical economic issues, fostering evidence-based decision-making.

Source: [Money Control](#)

NATIONAL MEDICAL REGISTER (NMR) PORTAL

Context: Union Health Minister recently launched the National Medical Register (NMR) Portal in New Delhi.

Background: This initiative contributes to strengthening the digital healthcare ecosystem and ensuring quality healthcare for the people of India.

About National Medical Register (NMR)

- NMR Portal facilitates the **registration of MBBS doctors eligible for practice in India**.
- It is mandated under Section 31 of the National Medical Commission (NMC) Act, 2019.
- **The Ethics and Medical Registration Board (EMRB)** maintains an electronic National Register containing doctors' details.
- The NMR is linked with Aadhaar IDs, ensuring individual authenticity.

Registration Process:

- Doctors register easily through a simple online process, and the portal interlinks medical colleges/institutions and State Medical Councils (SMCs).

Key Features:

- **Digital Registration:** This is a web-based registration of all medical practitioners to facilitate the e-registration and issuance of certificates. Access to upload, view, update, and download related information.
- **Accessible Database:** Searchable authenticated computer-based NMR for easy access by the public on the website. This transparency helps patients verify the credentials of their doctors.
- **Streamlined Processes:** The portal simplifies the processes for registration and record management.
- **Real-time Updates:** As soon as information is verified and updated it shall be published in the system to be available to the public.

Advantages of the NMR Portal

- **Transparency and Accountability:** The Portal will reduce the chances of preoccupation of fraud professionals as this one introduces interconnection of information of state medical councils with one another.
- **Patient Empowerment:** Patients can easily verify the credentials of their healthcare providers, fostering trust and confidence in the medical system.
- **Efficiency in Administration:** The digital platform significantly reduces administrative bottlenecks,

enabling quicker processing of registrations and renewals.

- Data Integration: The portal integrates data from various state medical councils, providing a unified and centralized register of medical practitioners.

Impact on Healthcare Governance

- The project integration of this new phase of NMR was designed within the frame of the Digital India scheme.
- It not only enhances administrative efficiency but also helps in maintaining high standards of medical practice by ensuring that only qualified professionals are registered.

Source: [PIB](#)

VIGYAN DHARA SCHEME

Context: The Union Cabinet recently approved the continuation of three umbrella schemes merged into a unified central sector scheme called “Vigyan Dhara” under the Department of Science and Technology (DST).

Background: -

- The merger of schemes is expected to improve fund utilization and synchronization among sub-schemes.

About Vigyan Dhara Scheme

- It's a unified **central sector scheme** under the Department of Science and Technology (DST).
- This scheme aims to bolster India's scientific and technological capabilities with a significant outlay of ₹10,579.84 crore for the period from 2021 to 2026.
- It merges three umbrella schemes to streamline and enhance the efficiency of science and technology initiatives in India.

Sub schemes:

- Science and Technology (S&T) Institutional and Human Capacity Building: Focuses on strengthening institutions and building a critical human resource pool in the field of science and technology.
- Research and Development (R&D): Promotes research activities across various scientific domains, including basic research and translational research in areas like sustainable energy and water.
- Research and development component of the scheme will be aligned with the Anusandhan National Research Foundation (ANRF).
- ANRF has been established under ANRF Act, 2023 to seed, grow and promote R&D and foster a culture of research and innovation throughout India's universities, colleges, research institutions, and R&D laboratories.
- Innovation, Technology Development, and Deployment: Encourages innovation and the practical application of new technologies, supporting industries and startups through targeted interventions.

Benefits:

- Efficiency: Improved fund utilization and synchronization among sub-schemes.
- Capacity Building: Enhanced institutional and human capacities in S&T.
- Research Enhancement: Promotion of research and innovation to strengthen the S&T ecosystem.
- Gender Parity: Focused interventions to increase women's participation in S&T.
- Vision 2047: Aligns with the vision of Viksit Bharat 2047, aiming for a developed India by 2047.

Source: [India Today](#)

PM-WANI SCHEME

Context: Recently, the Telecom Regulatory Authority of India (TRAI) has proposed reducing broadband charges for Public Data Offices (PDOs) under the PM-WANI scheme.

Background: This move aims to address the high costs that have been a barrier to the proliferation of public Wi-Fi hotspots.

About PM-WANI (Prime Minister Wi-Fi Access Network Interface) scheme

- The PM-WANI (Prime Minister Wi-Fi Access Network Interface) scheme is an initiative by the Indian government to enhance internet connectivity across the country, especially in rural and underserved areas.
- The PM-WANI (Prime Minister Wi-Fi Access Network Interface) scheme is overseen by the Department of Telecommunications (DoT), which is part of the Ministry of Communications.
- This initiative aims to set up public Wi-Fi networks through Public Data Offices (PDOs) to provide affordable and widespread internet access across India.

Objective:

- The primary goal of the PM-WANI scheme is to provide affordable and accessible internet services to the public through a network of public Wi-Fi hotspots.

Key Components:

- Public Data Office (PDO): These are local shops or small businesses that provide Wi-Fi services to users. They do not require a license or registration fee to operate.
- Public Data Office Aggregator (PDOA): These entities aggregate multiple PDOs and ensure the delivery of broadband services. They handle the authorization and accounting of PDOs.
- App Provider: Develops an app to register users and discover PM-WANI compliant Wi-Fi hotspots in the vicinity.
- Central Registry: Maintains details of App Providers, PDOAs, and PDOs. Managed by the Centre for Development of Telematics (C-DOT).

How It Works?

- Setup: PDOs set up Wi-Fi access points in public places like shops, cafes, and libraries.
- Access: Users can connect to these Wi-Fi hotspots using an app provided by App Providers.
- Authentication: Users are authenticated through a one-time password (OTP) sent to their mobile phones.

- Usage: Once authenticated, users can access the internet through the Wi-Fi hotspot.

Benefits:

- Increased Connectivity: Enhances internet penetration, especially in rural and remote areas.
- Economic Opportunities: Provides new business opportunities for small businesses acting as PDOs.
- Digital Inclusion: Bridges the digital divide by making internet access more affordable and widespread.
- Ease of Implementation: Simplifies the process for businesses to become PDOs without the need for complex licensing.

Source: [Hindu Businessline](#)

CENTRAL CONSUMER PROTECTION AUTHORITY (CCPA)

Context: The Central Consumer Protection Authority (CCPA) has imposed a ₹3 lakh penalty on Sriram's IAS for publishing a misleading advertisement.

Background:

- The ad falsely claimed that the institute had over 200 selections in the UPSC Civil Service Exam 2022, but the actual number of successful candidates was lower, and many had not attended the paid courses. This action was taken to protect consumer rights and ensure transparency in advertising.

Key takeaways

- **The Central Consumer Protection Authority (CCPA)** is a regulatory body established under the Consumer Protection Act, 2019 in India.
- The CCPA was formed in 2019 and became active in 2020.
- Its primary goal is to protect, promote, and enforce the rights of consumers. This includes addressing issues related to unfair trade practices, misleading advertisements, and violations of consumer rights.

Composition

- CCPA shall consist of following members appointed by Central Government.
 - Chief Commissioner
 - Two Commissioners. One commissioner each will represent for goods and services.

Powers and Functions

- Investigations: The CCPA can conduct inquiries and investigations into violations of consumer rights or unfair trade practices.
- Complaints: It can file complaints before the Consumer Commission and review matters related to consumer rights.
- Guidelines and Notices: The authority can issue guidelines to prevent unfair trade practices and safety notices to alert consumers against hazardous goods or services.
- Advisory Role: It advises the Central and State Governments on consumer welfare measures.
- Enforcement: The CCPA has the power to recall unsafe goods, order refunds, and stop unfair

practices.

Source: [Economic Times](#)

JIYO PARSI SCHEME

Context:The Minister for Minority Affairs recently launched the Jiyo Parsi Scheme portal.

Background:

- This portal aims to address the declining population of the Parsi community in India by providing financial assistance for medical treatments, childcare, and support for dependent elderly through a Direct Benefit Transfer (DBT) mode.

Key takeaways:

- The Jiyo Parsi Scheme was initiated by the Ministry of Minority Affairs in 2013 to address the declining population of the Parsi community in India.
- Parsis (Zoroastrians) are among the six religious communities notified as minority communities by the Union Government, along with Muslims, Christians, Sikhs, Buddhists, and Jains.
- The Jiyo Parsi Scheme is a Central Sector Scheme, meaning it is fully funded by the central government.

Objectives

- Stabilize Population: Arrest the declining trend of the Parsi population through structured interventions.
- Increase Birth Rate: Encourage Parsi couples to have more children.

Components

- Advocacy Component: Includes workshops and advertisement campaigns to create awareness.
- Health of the Community Component: Covers childcare and creche support, assistance to the elderly, etc.
- Medical Component: Provides financial assistance for the detection and treatment of infertility and fertility treatments.

Financial Assistance

- The scheme offers cash assistance to encourage Parsi couples to have children, applicable to all couples irrespective of their financial status.
- It has resulted in 214 births over five years through assisted reproductive techniques (ART).

Source: [PIB](#)

FLOOD WATCH MOBILE APPLICATION

Context:Recently, the Union Minister for Jal Shakti launched the Version 2.0 of the 'FloodWatch India' mobile application.

Background:

- FloodWatch India was developed by the Central Water Commission (CWC).

About FloodWatch India App

- The FloodWatch India app was first introduced by the Central Water Commission (CWC) on August 17, 2023.

App Features

- **Real-time Flood Information:** Provides flood situation updates and forecasts up to 7 days in advance.
- **User-Friendly Interface:** Available in readable and audio formats in English and Hindi.
- **Real-time Monitoring:** Users can check up-to-date flood situations across the country.
- **Data Sources:** Utilizes near real-time river flow data from various sources.
- **Location-Based Forecasts:** Offers flood forecasts at the nearest location, accessible from the Home Page.
- **State-wise/Basin-wise Forecasts:** Provides flood forecasts (up to 24 hours) or advisories (up to 7 days) by selecting specific stations, states, or basins.
- **Advanced Technologies:** Uses satellite data analysis, mathematical modeling, and real-time monitoring for accurate forecasts.

New Features in FloodWatch India 2.0

- **Expanded Monitoring:** Includes information from an additional 392 flood monitoring stations, totalling 592 stations.
- **Reservoir Information:** Provides data on the storage positions of 150 major reservoirs, aiding in understanding potential downstream flood situations.

Source: [DECCAN HERALD](#)

NIRF – NATIONAL INSTITUTIONAL RANKING FRAMEWORK

Context: The Ministry of Education unveiled the National Institutional Ranking Framework (NIRF) 2024.

Background:

- For the sixth consecutive year, the Indian Institute of Technology (IIT) Madras has been ranked first, continuing to be the top institution. The Indian Institute of Science (IISc), Bengaluru, has been named the best university. IIT Madras also retains its status as the top engineering college in India for the ninth year. IIM Ahmedabad, Bangalore, and Calcutta are among the top 5 institutions in the management category.

About National Institutional Ranking Framework (NIRF)

- The NIRF was established with the primary purpose of creating a reliable and comprehensive system to rank higher education institutions in India.
- It was developed by the **Ministry of Education in India**.
- It was launched in September 2015 and aims to provide a comprehensive assessment of institutions based on various parameters.
- The NIRF evaluates institutions **based on 5 broad parameters: teaching, learning and resources, research and professional practice, graduation outcomes, outreach and inclusivity, and perception**.

Key objectives:

- **Transparency and Accountability:** To provide a transparent and accountable ranking system that stakeholders can trust.
- **Informed Decision-Making:** To help students, parents, and educators make informed decisions about higher education institutions.
- **Encouraging Excellence:** To motivate institutions to strive for excellence in various aspects of

education and research.

- Benchmarking: To set benchmarks for institutions to measure their performance against peers.
- Policy Formulation: To assist policymakers in identifying strengths and areas for improvement in the higher education sector.
- Resource Allocation: To aid in the allocation of resources and funding based on performance metrics.

Source: [Economic Times](#)

NO BUYERS FOR J&K'S LITHIUM

Context: The Ministry of Mines was forced to scrap the auction for the lithium block in Jammu and Kashmir's (J&K's) Reasi district for the second time, following weak investor response.

Background:-

- This comes nearly 18 months after former Mines Secretary revealed the discovery of an inferred lithium ore deposit of 5.9 million tonnes in Reasi, last February.

Key takeaways

- The first auction was annulled on March 13 because fewer than the required minimum of three bidders cleared the first round. The very next day, the Mines Ministry put the block for auction again.
- The second attempt was also annulled last week, after failing to clear the first round despite the minimum bidder requirement being waved off this time around, as per auction rules. The second attempt saw no qualified bidders at all.
- Challenges in extracting and processing lithium from hard rock pegmatite deposits, such as those in Reasi, coupled with underdeveloped mineral reporting standards used in the tender documents, significantly deterred investors.
- **Some other reasons cited for lack of investors are:**
 - Bid document had limited information of the block
 - block in auction is too small to apply modern mineral systems-based tools.
 - No beneficiation study conducted to assess feasibility of extracting and processing lithium from the resources identified.
- According to experts, India's current resource classification rules largely based on the United Nations Framework Classification for Resources (UNFC) do not provide sufficient information to determine the economic viability of mining a mineral block.
- Clarity on the economic viability of mining lithium is crucial due to the high costs of the extraction process. With global lithium prices having fallen significantly in recent months, miners are increasingly focused on maintaining their margins.
- Most mining companies, stock exchanges, and regulatory bodies worldwide follow the Committee for Mineral Reserves International Reporting Standards (CRIRSCO) template. Unlike the UNFC system, the CRIRSCO template requires the reporting of economically viable reserves with high geological confidence confirmed through studies to at least a pre-feasibility level.
- Experts say that to attract private investment, India should adopt CRIRSCO-aligned internationally-compliant mineral reporting standards.

Source: [Indian Express](#)

NATURAL FARMING

Context: In her Budget proposals for 2024-25, Union Finance Minister Nirmala Sitharaman announced that over the next two years, one crore farmers nationwide will be introduced to natural farming, supported by certification and branding initiatives.

Background:

- Among states, Andhra Pradesh is a front runner in adopting natural farming but studies have raised concerns about the sustainability and yield (productivity) potential of this farming method.

National Mission on Natural Farming (NMNF)

- Government through the mission intends to motivate farmers to adopt chemical-free farming.
- The natural farming scheme under the 'Bharatiya Prakritik Krishi Paddhati' has a total outlay of ₹4,645.69 crore for six years (2019-20 to 2024-25).
- Government believes that the success requires a behavioural shift from chemical-based to cow-based, locally-produced inputs.

What are the features and benefits of Natural Farming?

- No chemical fertilizers and pesticides used.
- Promotes traditional indigenous practices.
- Emphasizes on-farm biomass recycling, biomass mulching, cow dung-urine formulations, botanical pest control, and exclusion of synthetic chemicals.
- Improves natural nutrient cycling and soil organic matter.
- It is a diversified farming system integrating crops, trees, and livestock allowing the optimum use of functional biodiversity.
- Potential benefits: increased farmer income, restored soil fertility, improved environmental health, and reduced greenhouse gas emissions.

Challenges and Concerns:

- Large-scale transition is a matter of concern due to India's large population and food security needs.
- Divergent results from studies on Zero Budget Natural Farming (ZBNF):
 - CESS Study (Andhra Pradesh): Lower costs of biological inputs, improved yields and incomes for farmers.
 - ICAR-IIFSR Study: Significant decline in wheat (59%) and basmati rice (32%) yields, raising concerns about sustainability and productivity.

Lessons from Sri Lanka:

- Complete shift to organic farming led to economic and political turmoil in Sri Lanka.
- Ban on chemical fertilizers resulted in fertilizer shortages, reduced crop yields, food security risks, price escalations, and protests.

Way Forward:

- Extensive studies and scientific assessments needed before large-scale adoption.
- Natural farming could be beneficial locally but may not be viable nationwide due to food security concerns.

- Noted economist M.S. Sidhu recommends rigorous scientific tests, especially on crop yields, before nationwide implementation.
- Suggests using natural farming for supplementary foodstuffs rather than staple cereals like wheat and rice.

Source: [Hindu](#)

IDEA4LiFE

Context: Recently, the Union Minister for Environment, Forest and Climate Change Bhupender Yadav launched Ideas4LiFE at IIT Delhi.

Background:

- The portal 'Ideas4Life.nic.in' will allow participants to submit their ideas and innovations online.

About Ideas4LiFE initiative

- The Ideas4LiFE initiative aims to collect innovative ideas that encourage environmentally friendly behaviours.
- The Ideas4LiFE Ideathon covers seven themes of Mission LiFE- Save Water, Save Energy, Reduce Waste, Reduce E-Waste, Say No to Single-Use Plastics, Adopt Sustainable Food Systems, and Adopt Healthy Lifestyles.
- Winning ideas under each of the seven themes of Mission LiFE will be recognized and awarded with attractive prizes for individuals as well as for institutions.

Purpose of Ideas4LiFE:

- Inspiration for Sustainability: Ideas4LiFE is set up to gather creative ideas and innovations online, inspiring people to live more sustainably.
- Resource Wisdom: It aligns with Prime Minister Narendra Modi's vision of using resources wisely.
- Inclusive Participation: Students, researchers, teachers, and innovators are invited to share their ideas, fostering a culture of innovation focused on protecting the environment.

Global Movement: Mission LiFE:

- Ideas4LiFE is part of a larger global movement called Mission LiFE, which promotes environmental sustainability.
- Participants worldwide are encouraged to think creatively and contribute to this vital effort.

Source: [PIB](#)

NATIONAL APPRENTICESHIP TRAINING SCHEME - NATS

Context: Recently, the Union Education Minister launched the National Apprenticeship Training Scheme (NATS) 2.0 Portal and disbursed Rs 100 crore stipends to apprentices through the Direct Benefit Transfer (DBT) mode.

Background:

- NATS 2.0 Portal facilitates registration and application for apprenticeships. It allows industries to manage vacancies and contracts, providing essential employability skills and a guaranteed monthly stipend to young graduates and diploma holders.

About National Apprenticeship Training Scheme (NATS):

- The National Apprenticeship Training Scheme (NATS) is a flagship program of the Government of

India aimed at skilling Indian youth in trade disciplines.

Key points about NATS:

- **Objective:** NATS encourages skill development among young people by providing practical, hands-on On-the-Job Training (OJT) opportunities. It bridges the gap between theoretical knowledge and practical skills.
- **Eligibility:** It offers training to graduate, diploma students, and vocational certificate holders. The duration of apprenticeships ranges from 6 months to 1 year.
- **Stipend:** During the apprenticeship period, apprentices receive a stipend. Fifty percent of this stipend is reimbursable to the employer by the Government of India.
- **Certificate of Proficiency:** At the end of the training, apprentices receive a Certificate of Proficiency issued by the Government of India. This certificate can be registered at all employment exchanges across India as valid employment experience.

Source: [India Today](#)

PROTECTION OF CHILDREN FROM SEXUAL OFFENCES (POCSO) ACT

Context: The Karnataka High Court has quashed proceedings under the Protection of Children from Sexual Offences Act (POCSO) Act against a 23-year-old accused after he married the alleged victim in the case, with the caveat that the proceedings can be revived if he abandons the victim and their child.

Background:

- The incident occurred on February 2, 2023, when the accused took the school-going girl to an isolated location and allegedly sexually assaulted her. The girl subsequently gave birth to their child. Both parties' -- accused and victim -- through their legal representatives submitted that they were in love, but faced parental opposition.

About Protection of Children from Sexual Offences (POCSO) Act

- It aims to address offences of sexual exploitation and sexual abuse of children, which were either not specifically defined or adequately penalised.
- It was enacted as a consequence of India's ratification of the UN Convention on the Rights of the Child in 1992.

Key features of the Protection of Children from Sexual Offences (POCSO) Act:

- It is a gender-neutral legislation as it defines a child as "any person" under the age of 18.
- It considers non-reporting a crime so any person in charge of an institution (excluding children) who fails to report the commission of a sexual offense involving a subordinate, faces punishment.
- It does not specify any time limit for reporting abuse so a victim may report an offence at any time, even years after the abuse has occurred.
- It keeps the victim's identity confidential as the Act forbids the disclosure of the victim's identity in any form of media unless authorized by the special courts established by the Act.

Key Provisions of the Protection of Children from Sexual Offences (POCSO) Act:

- It defines a child as any person below the age of 18 years. The Act provides punishment as per the gravity of the offence.
- It mandates that investigation in the cases is to be completed in two months (from the date of registration of FIR) and trial in six months.
- It states a sexual assault is to be considered aggravated if - the abused child is mentally ill or, when

the abuse is committed by a member of the armed forces or security forces, a public servant, or a person in a position of trust or authority of the child, like a family member, police officer, teacher, or doctor or a person-management or staff of a hospital, whether Government or private.

- It prescribes rigorous imprisonment for a term which shall not be less than ten years but which may extend to imprisonment for life and also a fine as punishment for aggravated penetrative sexual assault.
- It makes provisions for avoiding the re-victimization of the child at the hands of the judicial system. It makes it mandatory to report such cases as it makes it the legal duty of a person aware of the offence to report the sexual abuse. In case he fails to do so, the person can be punished with six months' imprisonment or a fine.
- It prescribes punishment to the people who traffic children for sexual purposes.
- It provides for punishment against false complaints or untrue information.
- It was amended in 2019 to increase the minimum punishment from seven years to ten years. It further adds that if a person commits penetrative sexual assault on a child below the age of 16 years, he will be punished with imprisonment between 20 years to life, with a fine.

Source: [Economic Times](#)

PUMPED STORAGE HYDROPOWER

Context: Budget 2024-25 promised that a policy for promoting pumped storage projects will be brought out for electricity storage and facilitating smooth integration of the growing share of renewable energy with its variable and intermittent nature.

Background:

- As the world focused on renewable energy and the challenge of variable power generation, many solutions for energy storage were proposed. The most widely adopted method globally is pumped storage. These are like super large batteries but natural and use water.

About Pumped Storage Hydropower (PSH):

- Pumped Storage Hydropower (PSH) is a type of hydroelectric energy storage that plays a crucial role in balancing electricity supply and demand.

How It Works

- PSH involves two water reservoirs at different elevations:
 - Upper Reservoir: Positioned at a higher elevation.
 - Lower Reservoir: Positioned at a lower elevation.
- During periods of low electricity demand, excess energy from the grid is used to pump water from the lower reservoir to the upper reservoir. This process stores energy in the form of gravitational potential energy. When electricity demand is high, the stored water is released back into the lower reservoir through turbines, generating electricity in the process.

Types of PSH

- Open-Loop PSH: This system has a continuous connection to a natural water source, such as a river.
- Closed-Loop PSH: This system operates independently of natural water bodies, using only the two reservoirs.

Advantages

- Energy Storage: PSH acts like a giant battery, storing energy for later use.

- Grid Stability: It helps balance supply and demand, ensuring a stable electricity grid.
- Renewable Integration: PSH supports the integration of intermittent renewable energy sources like wind and solar by storing excess energy.

India's experience

- India has 3.3 GW of pumped storage. Main ones are Nagarjunasagar, Kadana, Kadamparai, Panchet and Bhira. Some four are under construction and two in advanced levels of planning.

How the Kadamparai Plant Operates :

- In Tamil Nadu, wind and solar power can generate half of the state's electricity at noon, particularly in July. On a typical summer day, solar plants generate around 5,000 MW at noon, but this drops to zero by sunset. Wind power varies seasonally, with its peak from May to September.
- Tamil Nadu has peaks of around 17,000 MW to 20,000 MW on a daily basis. This year in July, maximum wind power generated reached 5,499 MW and maximum solar reached 5,512 MW. Wind and solar have Must Run Status in the State which means whatever they produce must be taken.
- The Kadamparai plant in Tamil Nadu helps balance the grid. It features an upper and lower reservoir, with a height difference of around 380 meters. The plant's turbine generator can produce electricity when water flows from the upper to the lower reservoir and can also function as a pump, consuming electricity to move water back up.
- Power managers in Tamil Nadu plan daily operations based on expected demand and weather forecasts. Excess solar power during the day is used to pump water to the upper reservoir at Kadamparai. When solar power generation ceases in the evening, the Kadamparai plant switches to generating mode, providing 400 MW of power for three to four hours to support evening peak loads.
- The upper reservoir holds around 1 TMC feet of water, with minimal leakage, often replenished by rainfall. During peak solar generation, hydro power (approximately 1,000 MW) is conserved for peak demand times or emergencies. Hydro power can be quickly activated if there's a sudden drop in other power sources.

Source: [Hindu](#)

WOMEN ENTREPRENEURSHIP PROGRAM

Context: Recently, the National Skill Development Corporation (NSDC) unveiled the Women Entrepreneurship Program to empower women entrepreneurs and spurring economic growth.

Background:

- WEP aims to create a supportive ecosystem for women entrepreneurs, enabling them to thrive and contribute significantly to India's economic growth.

About Women Entrepreneurship Program

- The program is designed to address the distinct challenges that women face when starting and growing businesses.
- It aims to empower approximately 25 lakh women across India by providing them with essential skills, knowledge, and resources.
- The initiative is in partnership with Britannia Industries Limited, reflecting a commitment to fostering an inclusive environment for women entrepreneurs.
- Divided into two phases, NSDC, with support from the National Institute for Entrepreneurship and Small Business Development (NIESBUD), will offer free online self-learning entrepreneurship

courses through the Skill India Digital Hub (SIDH). These courses, available in multiple languages, will cover crucial topics such as entrepreneurial skills, enterprise setup, finance basics, digital skills, and market analysis.

- In the next phase, NSDC extends robust incubation support to 10,000 shortlisted contestants across 100 business models.
- Additionally, participants' products and services will be highlighted on SIDH's e-commerce platform, UdhyamKart and Britannia's digital ecosystem for women entrepreneurship.
- NSDC will conduct periodic impact assessments to evaluate the success and sustainability of the supported businesses, ensuring the program's long-term effectiveness.

About National Skill Development Corporation (NSDC):

- Establishment: The National Skill Development Corporation (NSDC) was established on July 31, 2008, as a not-for-profit public limited company under section 25 of the Companies Act, 1956.
- Unique Model: NSDC operates as a unique Public Private Partnership (PPP) model under the Ministry of Skill Development & Entrepreneurship (MSDE)

Source: [PIB](#)



MISCELLANEOUS



RASHTRIYA VIGYAN PURASKAR (RVP)

Context:The central government recently announced the full list of the first-ever Rashtriya Vigyan Puraskar (RVP) 2024 awardees.

Background:

- The award ceremony is scheduled to take place on August 23 at the Rashtrapati Bhavan Cultural Centre, coinciding with the first National Space Day.

About Rashtriya Vigyan Puraskar

- The Rashtriya Vigyan Puraskar is a prestigious set of awards introduced by the Government of India to recognize outstanding contributions in the fields of science, technology, and innovation.
- These awards are on par with other national honours like the Padma awards.

Categories of Awards:

- Vigyan Ratna Awards: Recognizes lifetime achievements and contributions in any field of science and technology.
- Vigyan Shri Awards: Honors distinguished contributions in any field of science and technology.
- Vigyan Team Awards: Given to teams of three or more scientists/researchers/innovators for exceptional collaborative contributions.
- Vigyan Yuva-Shanti Swarup Bhatnagar (VY-SSB) Awards: The highest multidisciplinary science awards for young scientists (up to 45 years old), named after Shanti Swarup Bhatnagar.

Eligibility:

- Open to scientists, technologists, and innovators from government, private sector organizations, or individuals working independently.
- The awards also recognize contributions from Persons of Indian Origin abroad.

Domains:

- Covers 13 domains including Physics, Chemistry, Biological Sciences, Mathematics & Computer Science, Earth Science, Medicine, Engineering Sciences, Agricultural Science, Environmental Science, Technology & Innovation, Atomic Energy, Space Science and Technology.

Nomination and Announcement:

- Nominations are invited annually from January 14th to February 28th, with awards announced on May 11th (National Technology Day) and the ceremony held on August 23rd (National Space Day).
- All nominations received for the RVP awards are placed before the Rashtriya Vigyan Puraskar Committee (RVPC), headed by the Principal Scientific Adviser (PSA) to the Government of India.

Source: [Hindustan Times](#)

MULTIDIMENSIONAL VULNERABILITY INDEX

Context:The UN General Assembly recently launched the Multidimensional Vulnerability Index (MVI).

Background:

- The MVI is a crucial tool in the global effort to address vulnerabilities and build a more resilient and sustainable future for all nations.

Key takeaways

- The Multidimensional Vulnerability Index (MVI) is a comprehensive tool developed by the United Nations to assess the vulnerability of countries, particularly small island developing states (SIDS) and other developing nations.

Purpose:

- It aims to provide a more nuanced understanding of the challenges these countries face, beyond traditional economic indicators.
- It designed to highlight the unique vulnerabilities of countries that are often overlooked by conventional metrics like GDP per capita.
- It helps in identifying the need for concessional financing and other support mechanisms.
- It helps policymakers identify areas of weakness and prioritize interventions to enhance resilience and sustainable development.
- The index can be used by international organizations and donors to allocate resources more effectively, ensuring that aid reaches the most vulnerable populations.

Dimensions:

- **Economic Vulnerability:** Includes indicators such as GDP per capita, debt levels, and trade dependency.
- **Environmental Vulnerability:** Factors in exposure to natural disasters, climate change impacts, and biodiversity loss.
- **Social Vulnerability:** Considers health care access, education levels, and income inequality.

Benefits:

- **Targeted Interventions:** By identifying specific vulnerabilities, the MVI enables more targeted and effective interventions, leading to better outcomes for affected communities.
- **Enhanced Resilience:** Countries can use the insights from the MVI to build resilience against future shocks, reducing the long-term impact of disasters and economic downturns.
- **Informed Decision-Making:** The index provides valuable data for decision-makers, helping them to allocate resources efficiently and implement policies that promote sustainable development.

Source: [Hindu](#)

GALLANTRY AWARDS

Context: On the eve of Independence Day 2024, President Droupadi Murmu approved 103 gallantry awards, including four Kirti Chakras and 18 Shaurya Chakras.

Background:

- Post-independence, first three gallantry awards namely Param Vir Chakra, Maha Vir Chakra and Vir Chakra were instituted by the Government of India on 26th January, 1950 which were deemed to have effect from the 15th August, 1947.

Gallantry awards

- Gallantry awards are prestigious honours bestowed upon individuals, particularly members of the armed forces, police, and other security personnel, for acts of exceptional bravery, courage, and valour displayed in the face of danger or during active combat.
- Gallantry Awards are a recognition of the extraordinary bravery and selflessness exhibited by the awardees.

- These awards recognize and celebrate the extraordinary acts of heroism and selflessness that contribute to the safety and security of the nation.



- Gallantry awards are announced twice a year, on Republic Day (January 26) and Independence Day (August 15).

- Gallantry Awards are not limited to military personnel; they are also given to civilians who exhibit extraordinary bravery and selflessness.

- In India, these awards recognize acts of valour in both wartime and peacetime scenarios.

Types of Gallantry Awards:

- **Param Vir Chakra:** The highest military decoration in India, awarded for the most conspicuous bravery or some daring or pre-eminent act of valour or self-sacrifice, in the presence of the enemy.

- **Maha Vir Chakra:** The second-highest military decoration, awarded for acts of conspicuous gallantry in the presence of the enemy.

- **Vir Chakra:** The third-highest military decoration, awarded for acts of gallantry in the

presence of the enemy.

- **Ashoka Chakra:** Awarded for valour, courageous action, or self-sacrifice away from the battlefield. It is the highest peacetime gallantry award in India.
- **Kirti Chakra:** The second-highest peacetime gallantry award.
- **Shaurya Chakra:** The third-highest peacetime gallantry award.

Source: [Economic Times](https://www.economic-times.com)

E-SANKHYIKI PORTAL

Context: Ministry of Statistics and Programme Implementation has launched e-Sankhyiki portal.

Background:

- This initiative is designed to provide real-time inputs for planners, policymakers, researchers, and the public, enhancing the accessibility and usability of statistical data.

About e-Sankhyiki Portal

- The e-Sankhyiki Portal was launched by the Ministry of Statistics and Programme Implementation (MoSPI) on National Statistics Day, June 29, 2024.
- This portal aims to establish a comprehensive data management and sharing system to facilitate the dissemination of official statistics in India.
- **The portal consists of two main modules:**
 - Data Catalogue Module: Lists major data assets of the Ministry, allowing users to search and download data.
 - Macro Indicators Module: Provides time series data of macro indicators for four key

products of the Ministry, with features for filtering, visualizing, and accessing metadata.

- This initiative is designed to provide real-time inputs for planners, policymakers, researchers, and the public, enhancing the accessibility and usability of statistical data.

Source: [PIB](#)

Online



ALL INDIA **PRELIMS TEST** SERIES (AIPTS) 2025



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24 Exclusive **Current Affairs** Tests



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5 **Full Length GS** Tests
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MAINS

PAPER 1

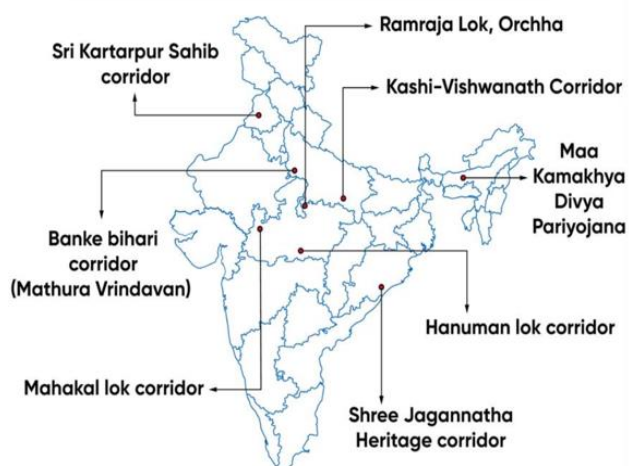
PILGRIM CORRIDOR PROJECTS

GS I – INDIAN CULTURE

Context: The corridor projects will be built for the Vishnupad Temple at Gaya and the Mahabodhi Temple at Bodhi Gaya in Bihar as announced by Union Budget 2024-25.

Pilgrim Corridor Projects:

- They are large-scale infrastructure developments designed to renovate and restore religious sites while also connecting nearby religious places.
- It is aimed at transforming these pilgrim places into world-class pilgrimage and tourist destinations.

Key Features of Pilgrim Corridor Projects:

- It helps in the **preservation and restoration** of culturally significant monuments surrounding the corridor. For example, the Kashi Vishwanath Corridor expanded the area around the temple and restored smaller temples including Sheetla Mata Temple, Shri Ram Temple, and Shri Gangeswar Mahadev Temple among others.

- It helps in the **amalgamation of development and cultural heritage**. For example, Mahakal Lok Corridor, which is flanked by two majestic gateways named Nandi Dwar and Pinaki Dwar, features murals depicting stories from the Shiv Puran.

- It enhances the visitor experience by **decongestion of religious places**, a virtual museum of the ancient temples, restrooms, shops, information centers, crowd

management facilities, enhanced accessibility of religious places (escalators and ramps), etc. being undertaken in various pilgrim corridor projects.

- It helps to **boost religious tourism and leads to generating additional employment and ancillary activities**. India earned over ₹2.3 lakh crore in foreign exchange from tourism, a 65.7% increase year-on-year (Economic Survey 2023-24).

Challenges/Issues related to Pilgrim Corridor Development Projects:

- It faces issues of **rehabilitation**. For example, more than 17 acres of land, encompassing five villages, had to be acquired for the implementation of the Jagannath Heritage Corridor project.
- It may **lead to the demolition of neighbouring old monuments**. For example, concerns related to the demolition of smaller but ancient temples were raised during the Kashi Vishwanath Corridor project.
- **Large-scale construction can have negative effects on the local environment, including pollution, deforestation, and disruption of natural water bodies.**
- It promotes large-scale tourism which may see a rise in the carbon footprints of these places.

PYROCUMULONIMBUS CLOUDS AND WILDFIRES

GS I – GEOPHYSICAL PHENOMENA

Context: Studies have shown that with temperatures soaring across the world, wildfires are becoming more common

and intense. This could be spiking the occurrence of pyrocumulonimbus clouds.

Pyrocumulonimbus Clouds:

- They occur only when there is an **extremely hot wildfire** — **volcanic eruptions** can also lead to the formation of pyrocumulonimbus clouds.
- **The intense heat from the fire warms the surrounding air which moves upward into the atmosphere. As this hot and very buoyant air — carrying water vapour, smoke, and ash — rises, it expands and cools down.**
- Once it is cool enough, water vapour condenses on ash, forming a grey or brown cloud. At this stage, the cloud is known as a pyro cumulus cloud, also known as a fire cloud.
- If there is sufficient water vapour available and the upward movement of hot air intensifies, pyrocumulus clouds can evolve into a pyrocumulonimbus clouds.
- These clouds can reach heights of 50,000 feet and generate their own systems of thunderstorms.
- They can **produce lighting but do not generate much rain.**
- As a result, they can spark new wildfires many kilometres away from the main blaze.
- They can also trigger strong winds that can make the spread of the wildfire faster and unpredictable.
- For instance, these clouds were formed during the Australian bushfires of 2019-2020 when temperatures crossed 800 degrees Celsius.

Reasons for the frequent occurrence of Pyrocumulonimbus Cloud Events:

- **It is due to global warming** which is leading to higher temperatures and **longer dry periods. It creates drier conditions** that increase the frequency and intensity of wildfires and **provide more opportunities for pyrocumulonimbus cloud formation.**
- **It is due to warmer temperatures and changing precipitation patterns that increase vegetation growth,** which serves as **fuel for wildfires.**
- It is a result of **extreme weather patterns like intense and frequent heatwaves, along with altered wind patterns that can trigger and spread wildfires more rapidly.** **Human activities like deforestation, land use changes, and urbanization** exacerbate wildfire risks by increasing the **likelihood of human-caused fires** and indirectly contributing to pyrocumulonimbus cloud formation.

WEATHER FORECASTING IN INDIA

GS1 - IMPORTANT GEOPHYSICAL PHENOMENA

Context: The trust in weather forecasts has increased significantly, thanks to improvements in accuracy. But the demand for even more accurate and specific predictions continues to grow, particularly in light of the increasing instances of extreme weather events being triggered by climate change, and the disasters that they sometimes turn into.

Importance/Significance of weather forecasting system in India:

- It helps in **enhancing food security as India's agriculture is heavily reliant on the monsoon.** Hence, accurate weather forecasting helps in **planning agricultural activities** such as sowing, irrigation, harvesting, crop management, and pest and disease control.
- It contributes to **disaster management and mitigation** by giving accurate weather forecasts as India is **vulnerable to various disasters** such as cyclones, floods, heatwaves, cold waves, and droughts. It reduces economic losses for farmers and the energy sector, like hydropower and solar power by giving accurate weather forecasts.
- It plays a vital role in **planning construction activities**, particularly during the monsoon and winter seasons. It helps in avoiding delays, ensuring worker safety, and minimizing construction costs.
- It is crucial for the safety and efficiency of road, rail, and sea transportation. For example, fog forecasts in winter help in the management of flight schedules.
- It helps in the **improvement of public health and safety.** For example, forecasts of heat waves help in

Instruments	2024	2014*
Automatic weather stations	1,208	675
Automatic rain gauges	1,382	1,350
Doppler weather radars	39	15
High wind speed recorders	35	19
Upper air observation systems	56	43
GPS-based balloon stations	23	0
District-wise rainfall monitoring scheme	5,896	3,955
Super computers	2	0
Weather satellites	3	1

10 years earlier *. Source: IMD

prediction has increased in India.

- The need for **weather predictions** at the hyper-local has increased in recent times.
- The increase in incidents of heavy localised rainfall has further increased demands for improving the accuracy of weather predictions in India

Issues/Challenges with Weather Forecasting in India:

- As India is a **tropical country** it is more challenging to forecast accurately due to greater variability in weather phenomena.
- The lack of a 3km X 3km grid in IMD hinders the ability of monsoon prediction at the hyperlocal level as IMD's current weather forecast ability is spread over a 12km X 12km area.
- The science of weather forecasting suffers from inherent uncertainties.
- There is a challenge in incorporating diverse and accurate data into numerical weather prediction models.
- IMD suffers from outdated and insufficient observational infrastructure like the early warning systems.
- IMD faces the challenge of a lack of enhanced collaboration in data sharing related to transboundary air pollution and shared water resources with the meteorological departments of China and Pakistan.

Improvements in Weather Forecasting in India:

- The improved cyclone forecast system in India has led to the establishment of a reliable response and evacuation mechanism. For example, the accurate predictions of Cyclone Phailin in 2013 and Cyclone Amphan in 2020 have avoided the loss of thousands of human lives.
- Winter Fog Experiment (WIFEX) developed by IMD has helped in the dissemination of fog information, which is used by airlines and passengers to plan their travel.
- IMD has developed a SAFAR system to monitor air pollution levels in major cities such as Delhi.
- IMD has been recognised as one of the six Regional Specialized Meteorological Centres of the World Meteorological Organization (WMO). IMD has contributed to the United Nations 'Early Warning for All' programme regarding climate change.

the prevention of heat stroke.

- It is essential for **managing water resources** like Irrigation planning and reservoir management.

Need/Reasons for increased demands for more accurate weather predictions in India:

- There is an increased **frequency of extreme weather events** like cloudbursts, and intense heatwaves, that threaten people's lives and livelihoods throughout the year.
- There is an **increase in climate-induced vagaries** that have triggered disasters like the recent landslides in Wayanad and lake bursts in Sikkim and Uttarakhand last year. Hence the need for more robust and accurate weather

PAPER 2

ARTICLE 370

GS II – FEDERALISM

Context:The security grid in Jammu and Kashmir has been put on an alert in view of the fifth anniversary of the abrogation of Article 370 of the Constitution, with all security forces instructed to avoid the movement of convoys on August 5.

Article 370:

- It was added to the Indian constitution, as a **temporary provision** on October 17, 1949.
- It permitted the state of **Jammu and Kashmir to draft its own Constitution**.
- It **restricted the Indian Parliament's legislative powers** in the state.
- The Constituent Assembly of Jammu and Kashmir was empowered to recommend which articles of the Indian Constitution should apply to the state.
- **Clause 3 of Article 370 gave the President of India the power to amend its provisions and scope.**
- Article 35A stemmed from Article 370 and was **introduced through a Presidential Order in 1954**. It empowered the Jammu and Kashmir legislature to **define the permanent residents** of the state and their special rights and privileges.

Abrogating of Article 370:

- The President of India in the exercise of the powers conferred by Clause (1) of Article 370 of the Constitution had issued the Constitution (Application to Jammu and Kashmir) Order of 2019 on 5th August 2019.
- It said the **laws of the Parliament will now apply to the state of Jammu and Kashmir**.

Reasons for the abrogation of Article 370:

- **Article 370** was considered an impediment in the fight against terrorism **as it provided special status for Jammu and Kashmir. Its abrogation will help to implement stringent acts like the Unlawful Activities Prevention Act to fight against cross-border terrorism.**
- **It was done as a means to promote national integration** because Article 370 allowed a separate constitution, flag, and powers to Jammu and Kashmir, which created a sense of separate identity among the people of the state which misguided youth and created a demand for separatism among them.
- **Article 370 did not allow anti-corruption agencies to enter Jammu and Kashmir which resulted in poor anti-graft architecture** in the state leading to massive corruption, money laundering, and hawala transactions. It was reasoned that abrogation of Article 370, allowed for the stringent application of the Prevention of Money Laundering Act and Foreign Exchange Management Act.
- **It can promote economic development through greater investment from large business houses in the state** as the non-agricultural land in the state could now be sold and bought by any Indian citizen.
- It can lead to the **effective implementation of affirmative policies and legislations** such as the Right to Education, Right to Information, and reservation benefits, to OBCs, SCs, and STs.

Significance/Positive developments post abrogation of Article 370:

- **It has improved the quality of governance by improving** the last-mile delivery of services, digitisation of 1000 public utilities, and near completion of major projects in the PM's development package.
- **It has led to economic development in the region by** attracting Rs 6,000 crore worth of investments. The number of tourists visiting went up from 3.4 million in 2020 to 21.1 million in 2023.
- **It has increased people's trust in the political and electoral system** as the 2024 general election was an incident-free poll, with voter turnout at 58.6 percent, the highest in 35 years.
- **It has led to the development of consensus across political parties that has resulted in the halt of**

the customary call for boycotts, bandhs, civil unrest, and stone-pelting incidents.

- **It has created social stability in the region** with the decline in violence and the restoration of normalcy. Events promoting peace and development are now being held in areas that were previously considered no-go zones.

Issues/Challenges after the abrogation of Article 370:

- It has led to increasing infiltration in the Jammu sector. There have been increased terror attacks on civilians and army personnel in the Jammu region.
- It has led to the **concentration of power and erosion of social capital due to the** constitutional amendments, followed by legislative changes, executive fiats, and administrative orders.
- It has caused a **vacuum in local governance and representation as the mainstream political parties** such as the National Conference and the People's Democratic Party, have struggled to regain their footing in the Jammu and Kashmir region.
- **There have been widespread reports of human rights violations**, including restrictions on civil liberties, internet blackouts, and the detention of political leaders and activists.
It has caused diplomatic challenges, particularly with Pakistan.

INDIA AND UKRAINE RELATIONS

GS II – INDIA'S BILATERAL RELATIONS

Context: Indian Prime Minister paid a visit to Ukraine at the invitation of Ukraine's President.

India and Ukraine Relations:

- The Soviet Union under the Ukrainian-born Leonid Brezhnev supported India in the 1971 war against Pakistan. The slogan of Hindi-Rusi bhai-bhai was coined by the USSR's Ukrainian leader, Nikita Khrushchev.
- There have been regular exchanges of high-level visits and interactions between India and Ukraine.
- Ukraine has been a **source of military technology and equipment for India since its independence**.
- Ukraine-manufactured R-27 air-to-air missiles are used on the SU-30MKI fighters operated by the Indian Air Force (IAF).
- **India was Ukraine's largest export destination in the Asia-Pacific region** and India was Ukraine's fifth-largest export destination in 2020.
Bilateral trade between India and Ukraine reached US \$3.386 billion in 2021-22.
- **The main items of export from Ukraine to India are agricultural products, metallurgical products, plastics, and polymers while the main items of export from India to Ukraine are pharmaceuticals, machinery, chemicals, and food products.**
- India has provided 12 consignments measuring 99.3 tons of humanitarian assistance to Ukraine in the wake of the Ukraine-Russia war. The aid and assistance comprise medicines, blankets, tents, tarpaulin, and medical equipment.
- The local Indian community in Ukraine has formed an association **called "India Club"** which organizes cultural and sports events.
- More than 30 Ukrainian cultural associations/groups, spread across the country, are engaged in the promotion of Indian art forms, yoga, philosophy, Ayurveda, and spirituality. **The celebration of Yoga Day and the birth anniversary of Mahatma Gandhi.**
- There has been institutional cooperation through the **Indian Technical and Economic Cooperation (ITEC) program**, which offers training or capacity-building programs in different centers of excellence in India, and the **Indian Council for Cultural Relations (ICCR) scholarship**, which offers higher-level courses covering a wide range of subjects in eminent Indian Institutions.

Issues/Challenges in India-Ukraine Relations:

- There is a decline in the volume of India-Ukraine trade from \$3.39 billion in 2021-22 to \$0.71 billion in 2023-24, due to the ongoing Russia-Ukraine Crisis.

- The decline in trade has impacted India's import of agricultural, machine-building, and military goods from Ukraine. For example, there is rising inflation in India due to the impact on the supply chain of sunflower oil.
- India's continued engagement with Russia, and its decision to avoid all public criticism of Moscow, has led to a little dampening of the spirit of India-Ukraine geopolitical cooperation.
- Ukraine's criticism of **India's Nuclear Test and India's Kashmir policy** has also been an irritant in India's fully steamed engagement with Ukraine.

Key Highlights of India's PM Visit to Ukraine:

- India's PM emphasized that India has never been neutral in the Russia-Ukraine conflict and has always stood for peace. India seeks sincere engagement among all stakeholders to find practical solutions for an early resolution of the conflict.
- An **Intergovernmental Commission between India and Ukraine has been established to restore and deepen bilateral trade and economic relations** to pre-conflict levels.
- India and Ukraine signed four agreements covering areas such as agriculture, the food industry, medical product regulation, and cultural cooperation.
- India gifted four **Bharat Health Initiative for SahyogHita & Maitri (BHISHMA) cubes** to Ukraine, designed to provide emergency medical care through mobile hospitals.
- India's PM extended an invitation to the Ukrainian President to visit India, marking a significant gesture during his first visit to Ukraine since 1991.

INDIA-MALAYSIA RELATIONS

GS II – BILATERAL RELATIONS

Context: India and Malaysia decided to elevate their ties to the level of comprehensive strategic partnership following a bilateral meeting between the Indian Prime Minister and his Malaysian counterpart, who is on a three-day visit to India.

Areas of cooperation between India and Malaysia:

- India and Malaysia are members of key global forums like the **Commonwealth of Nations, NAM, G-15, and G-77. This forms a strong foundation for close geo-political cooperation.** Further, India and Malaysia closely cooperate through **ASEAN plus and East Asia Summits.**
- India and Malaysia have steadily **expanded their defence ties** since signing a defence cooperation memorandum in 1993.
- India and Malaysia engage in **regular defence cooperation meetings and joint military exercises.** For example, Exercise Harimau Shakti (Military), Exercise Samudra Lakshmana (Navy), and Exercise Udara Shakti (Air Force).
- Bilateral trade between India and Malaysia has reached a record high of USD 19.5 billion. Malaysia is India's 13th largest trading partner.
- As per official figures (DPIIT), Malaysia ranks as the 26th largest investor in India with an FDI inflow of US\$1.16 billion during the period April 2000 to September 2022.
- **India is a significant investor in Malaysia,** particularly in sectors like technology, manufacturing, and services. More than 150 Indian companies, including 61 Indian joint ventures and 3 Indian Public Sector Undertakings, operate in Malaysia.
- **Exports from India include mineral fuels, aluminium, meat, iron and steel, copper, organic chemicals, and machinery.** Imports to India include palm oil, mineral fuels, electrical machinery, animal or vegetable fats, and wood. **India Business Summit 2023 celebrated 30 years of ASEAN-India Engagement,** with significant participation from Indian and Malaysian stakeholders.
- Malaysia is home to over 2.95 million large Indian diaspora and the second-largest **Persons of Indian Origin (PIO) community** in the world after the US.
- India and Malaysia share close cultural cooperation through Indian Cultural Centre Kuala Lumpur, established in 2010 and Netaji Subhash Chandra Bose Indian Cultural Center (NSCBICC) offers classes in Carnatic vocal music, Kathak dance, Yoga, and Hindi, with teachers from both India and Malaysia, Hikayat

Seri Rama (Malay literary adaptation of the Hindu Ramayana epic) reflects local adaptations, and close literary cooperation. Ramayana's themes are reflected in local stories, arts, and performances of Malaysia.

Significance of India-Malaysia Relations:

- India-Malaysia relations align with **India's Act East Policy**. Close cooperation with Malaysia provides India with a strategic pivot toward the ASEAN region and enhances its influence and connectivity in Southeast Asia. Deepened India-Malaysia relations also form an important pillar of India's effort of outreach to countries of the Global South.
- India and Malaysia have a close cooperative mechanism on the **Straits of Malacca and Singapore (SOMS)**, a key for the establishment of rule-based order in the Indo-Pacific.
- **Comprehensive Economic Cooperation Agreement (CECA)** between India and Malaysia will provide a boost to India's effort to achievement of its foreign trade target of \$2 trillion in merchandise exports by 2030.
- The close people-to-people connection and the presence of a large Indian diaspora in Malaysia can be leveraged to increase cross-border investment and trade.

Issues/Challenges in India-Malaysia Relations:

- Malaysia's rejection of India's request for **extradition of Zakir Naik**, who is wanted in India on hate-speech and money laundering charges, is one of the prominent challenges in India-Malaysia relations.
- **Malaysia's strong criticism of the Indian Government's Policies like the Citizenship Amendment Act, and the reorganisation of Jammu and Kashmir, has created a further wedge between India and Malaysia.**
- The economic relationship between India and Malaysia faces challenges such as higher import tariffs and trade restrictions. This has impeded the growth of bilateral trade between India and Malaysia.
- There are **concerns about illegal immigration, exploitation of workers, and human trafficking surrounding the Indian diaspora.** The detention of hundreds of Malaysians during the COVID-19 pandemic also created tensions between India and Malaysia.
- The increase in Chinese influence in the politics and economy of Malaysia creates further geo-political and geo-strategic challenges for India.

Key Outcomes of the recent Malaysian Prime Minister Visit to India:

- **The existing Enhanced Strategic Partnership**, which was established in 2015, was upgraded to a Comprehensive Strategic Partnership.
- **Bilateral trade between India and Malaysia** reached a record high of USD 19.5 billion. This achievement underscores the robust economic ties and mutual interest in expanding trade relations. Both leaders encouraged further investment in various sectors, including fintech, energy, digital technologies, and start-ups, to strengthen economic cooperation.
- **Multiple agreements** were signed covering critical areas such as worker mobility, digital technology, culture, tourism, sports, and education.
- MoU was signed to **streamline the processes** related to the movement and management of workers between the two countries.
- MoU was signed for **Cooperation in the field of Ayurveda and other traditional systems of medicine.** India will establish an Ayurveda Chair at Universiti Tunku Abdul Rahman in Malaysia, for the promotion of traditional medicine education and research.
- India has agreed to support Malaysia's interest in joining BRICS. They agreed to collaborate on sustainable energy initiatives and climate change mitigation, with Malaysia joining the **International Big Cat Alliance (IBCA).**
- India and Malaysia have agreed to support and expedite the review process of the **ASEAN-India Trade in Goods Agreement (AITIGA)** and make it more effective and business-friendly. The aim is to conclude the review by 2025 and enhance supply chain connections between India and ASEAN countries.
- India has agreed to a one-time export of 2,00,000 metric tonnes of white rice.
- Both leaders emphasized the need to tackle extremism and radicalism. Malaysia welcomed a special allocation of 100 seats under India's Technical and Economic Cooperation (ITEC) Programme for Malaysian

students in fields such as cybersecurity, AI, and machine learning.

- India and Malaysia have agreed to work on connecting India's Unified Payments Interface (UPI) with Malaysia's PayNet for digital transactions.

INDIA-VIETNAM

GS II – BILATERAL RELATIONS

Context: India and Vietnam have adopted a new plan of action to strengthen and implement the bilateral 'comprehensive strategic partnership' over the next five years.

India-Vietnam Relations:

- **During the struggle for independence, Mahatma Gandhi and President Ho Chi Minh exchanged messages.**
- India has contributed to peacebuilding in Vietnam in the 1950s.
- **India established diplomatic relations with Vietnam in 1972.** It became a Comprehensive Strategic Partnership in 2016.
- The relationship between India and Vietnam is guided by a "**Joint Vision for Peace, Prosperity and People**" adopted in 2020.
- India and Vietnam celebrated the **50th anniversary of the establishment of diplomatic relations** in 2020.
- The 18th **Joint Commission Meeting (JCM)** on Economic, Trade, Scientific, and Technological Cooperation was held on 16th October 2023 in Hanoi.
- India-Vietnam trade from April 2023 to March 2024 was USD 14.82 billion. **India's exports to Vietnam were USD 5.47 billion, and imports were USD 9.35 billion.**
- **The ASEAN-India Trade in Goods Agreement** concluded in 2009 provides a **preferential trade regime between India and Vietnam** and that Agreement is currently under review.
- **India exports engineering goods**, agricultural products, chemicals, pharmaceuticals, electronic goods, minerals, textiles, and plastics to Vietnam.
- **Imports from Vietnam include computer and electronic goods**, mobile phones, machinery, steel, chemicals, footwear, garments, and wooden products.
- India has made investments in Vietnam which is around **USD 2 billion, including energy**, mineral processing, agro-processing, IT, auto components, pharmaceuticals, hospitality, and infrastructure sectors.
- Vietnam's investments in India are about USD 28.55 million, primarily in consumer goods, electronics, construction, IT, and pharmaceuticals.
- India has completed about **45 Quick Impact Projects in over 35 provinces of VietNam** under the **Mekong-Ganga Cooperation framework**.
- The **Archaeological Survey of India** completed the conservation and restoration of **A, H, and K group of temples at the My Son complex site** and India has supported the conservation and restoration of the **UNESCO World Heritage site of 'My Son' in Quang Nam Province, Central Vietnam.**
- India and Vietnam have a strong defence and security cooperation, with a 2009 MoU on Defence Cooperation and a **2015 Joint Vision on Defence Cooperation providing the framework.**
- India and Vietnam signed a new "**Joint Vision Statement on India-Vietnam Defence Partnership towards 2030**" and a "**Memorandum of Understanding on Mutual Logistics Support**".
- In 2023, Vietnam was **gifted an indigenously built missile corvette INS Kirpan.**
- MoUs between Indian and Vietnamese institutions promote academic and cultural exchanges. Conferences and summits like the **Northeast India Festival** in Ho Chi Minh City foster bilateral cultural ties.
- Vietnamese Buddhist scholars and pilgrims regularly travel to India, including to the **Vietnamese Buddhist pagoda in Bodhgaya.**
- **Yoga is immensely popular across Vietnam**, with hundreds of yoga clubs and numerous Indian yoga teachers offering their services.
- The **Swami Vivekananda Indian Cultural Centre in Hanoi** promotes further understanding of India and fosters closer links between the two countries through various cultural programs and activities.

Challenges/Issues in India and Vietnam Relations:

- India and Vietnam have fought wars with China and have border issues with it.

- China continues to encroach on the two countries' territories aggressively. As a result, it is natural for both countries to work together to prevent China from acting aggressively.

News:

- India and Vietnam agreed on a new plan of action for their **comprehensive strategic partnership** established in 2016, which will be implemented **over the next five years (2024-2028)**. Its objectives include strengthening **bilateral trade and economic cooperation**. Enhancing collaboration in technology and development, and fostering partnerships in defence and security.
- India announced that the central banks of both countries reached an agreement to establish **digital payment connectivity, enhancing financial transactions between the two nations**.
- India will extend a **USD 300 million credit line** to Vietnam to support its military security and development projects.
- Six Memorandums of Understanding (MoUs) covering various areas including agricultural research, customs capacity building, law and justice, radio and television, and traditional medicines were signed.
- Vietnam proposed raising annual bilateral trade to USD 20 billion from the current USD 14.8 billion.
- **India and Vietnam are** committed to strengthening cooperation in the Indo-Pacific region, focusing on maintaining **freedom of navigation and overflight in the South China Sea**.
- A new economic diplomacy dialogue will be established at the deputy foreign minister level to address trade and investment issues.

MAHATMA GANDHI NATIONAL RURAL EMPLOYMENT GUARANTEE SCHEME (MGNREGS)

GS II – GOVERNMENT POLICIES AND INTERVENTIONS

Context: Work demand under the government's flagship rural job guarantee programme fell sharply in July, possibly reflecting strong economic activity as well as plentiful monsoon showers that typically causes migration of unskilled workers to agriculture.

Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS):

- It guarantees **100 days of employment** each financial year for adult members of **rural households** willing to perform **unskilled manual work** at the statutory minimum wage.
- It is one of the largest **work guarantee programmes** in the world launched in **2005** by the **Ministry of Rural Development**.
- **It is implemented by the Ministry of Rural Development** in association with state governments.
- Its important feature is its **legal guarantee**, ensuring that any rural adult can **request work** and must **receive** it within **15 days**. If this commitment is not met, an **unemployment allowance** must be provided.
- **Section 17** of the **Mahatma Gandhi NREGA, 2005** mandates the **Gram Sabha** to conduct **social audits** of works undertaken under the scheme.
- **The budget allocation of MGNREGS** for the financial year **2023-24** was approximately **Rs 73,000 crore**, reflecting an increase from previous years to meet the rising demand for employment.
- In the FY 2022-23, MGNREGA provided over **300 crore person-days of work**, with approximately 11 crore households participating in the scheme.

Challenges/Issues regarding the Implementation of the MGNREGS:

- **There have been concerns over minimum wage determination** as it is based on the **Consumer Price Index for Agricultural Labourers**, which does not reflect the different types of work performed by MGNREGS workers.
- There are concerns over **poor planning and administrative skills** as panchayats, except in some states like Karnataka and West Bengal, lack experience in planning large-scale programs.
- **It faces problems due to a lack of adequate manpower** because of insufficient administrative and technical staff at the Block and Grama Panchayat levels which affects the planning, monitoring, and transparency of the

scheme.

The budget for MGNREGS has increased significantly, raising concerns about **sustainability** and funding sources due to the **declining tax-GDP ratio**.

- MGNREGA aims to promote equal pay but there have been instances of discrimination against women and marginalised groups.
- Issues like **fake job cards** for non-existent workers and high levels of **corruption** result in minimal funds reaching intended beneficiaries.

Reasons for decline in Demand Work:

- Approximately **22.80 million individuals** sought work under the scheme in July, reflecting a 21.6% decline from the same period in 2023.
- The economy grew at a higher-than-anticipated pace of 8.2% in the last Fiscal Year (FY) 2023-24. Work demand under MGNREGS usually drops when better-paying **employment** opportunities are available due to strong economic growth, **possibly reflecting robust economic activity**.

In 2024, abundant seasonal showers in July **reduced the 11% rainfall deficit seen in**

June. The **monsoon** typically causes large-scale **migration** of rural workers to villages for crop sowing, reducing the demand for unskilled jobs under the MGNREGS.

MENTAL HEALTHCARE IN INDIA

GS II – HEALTH

Context: The constitution of a task force to study the mental health of medical students is a welcome measure. Governments at central and state levels, however, need to do more and address the mental health challenges of all sections of people.

Mental Health:

- According to the **World Health Organization (WHO)**, **mental health** is a state of mental well-being that enables people to cope with the stresses of life, realize their abilities, learn well and work well, and contribute to their community.
- **The 2015-16 National Mental Health Survey** showed that 10.6 percent of the above 18-year-old population had such disorders – this includes 16 percent of those in the productive age group of 30-49 years.
- According to a report by the World Health Organisation, India is facing a serious mental health crisis, with an estimated 56 million people suffering from depression and 38 million from anxiety disorders.

Issues/Challenges Faced by the Mental Healthcare System in India:

- Mental health has historically been a low priority for Indian policymakers. Despite an estimated need of over Rs 93,000 crore for mental health, the government allocated only Rs 600 crore in 2019 and Rs 1,000 crore in the latest budget, with a majority of funds going to tertiary institutions.
- The healthcare infrastructure dedicated to mental health is severely lacking. There are not enough mental health professionals, hospitals, or facilities to meet the growing demand. India has 0.75 psychiatrists per 100,000 population, while the desirable number is anything above 3 psychiatrists per 100,000.
- The cost of mental health services in private healthcare settings is prohibitive for many. According to the recently conducted National Mental Health Survey (NMHS), the treatment gap for any mental disorder in India was reported to be as high as 83%.
- A common issue in India's policymaking is the gap between what is needed and what is feasible. **The National Mental Health Policy of 2014** and the Mental Health Act of 2017 aimed to prioritize mental health, but there is a lack of clarity on implementation, resource allocation, and timelines.
- Mental health services are concentrated in urban areas, leaving rural populations with limited or no access to care. This geographical disparity exacerbates the mental health crisis in rural regions.
- Mental health issues are often stigmatized in India, leading to social discrimination. This discourages individuals from seeking help and exacerbates their conditions.

- There is a significant lack of awareness about mental health, leading to misconceptions and neglect. Educational initiatives are insufficient in promoting mental health literacy.

Initiatives to Improve Mental Health in India:

- **The Mental Healthcare Act of 2017** makes several provisions to improve the state of mental health in India. It seeks to ensure the rights of the person with mental illness to receive care and to live a life with dignity. It provides the right to access to healthcare and decriminalised suicide stating that whoever attempts suicide will be presumed to be under severe stress, and shall not be punished for it.
- **Rights of Persons with Disabilities Act of 2017** acknowledges mental illness as a disability and seeks to enhance the Rights and Entitlements of the Disabled and provide an effective mechanism for ensuring their empowerment and inclusion in society.
- **The National Mental Health Programme (NMHP)** was introduced in 1982 to provide mental health services as part of the general healthcare system. **The District Mental Health Programme (DMHP)** component of the NMHP has been sanctioned for implementation in 704 districts for which support is provided to States/UTs through the National Health Mission.
- **National Tele Mental Health Programme** was introduced in the Budget of 2022-23, to further improve access to quality mental health counselling and care services in the country.
- Kiran is a 24/7 toll-free helpline by the Ministry of Social Justice and Empowerment in 2020 to offer support to those dealing with anxiety, stress, depression, suicidal thoughts, and other mental issues.

NATIONAL EDUCATION POLICY 2020

GS II – EDUCATION

Context: The Ministry of Education celebrated the 4th anniversary of the National Education Policy (NEP) 2020 with a week-long campaign called "Shiksha Saptah."

National Education Policy (NEP) 2020:

- It replaced the National Policy on Education of 1986, which was modified in 1992 to transform India into a vibrant knowledge society and global knowledge superpower by making both school and college education more **holistic, flexible, and multidisciplinary** and aimed at bringing out the unique capabilities of each student.
- It envisions a massive transformation in education through the **five foundational pillars - Access, Equity, Quality, Affordability, and Accountability**.
- It is aimed at addressing India's evolving development needs by overhauling the education system to meet 21st-century goals and **Sustainable Development Goal 4 (SDG4)** while preserving India's cultural heritage.

Salient features of National Education Policy (NEP) 2020:

- It aims for universal access by focusing on providing access to education from pre-school through secondary levels.
- It provides transitions from the 10+2 to a 5+3+3+4 system, including children aged 3-6 in the school curriculum with an emphasis on **Early Childhood Care and Education (ECCE)**.
- It promotes multilingualism by using mother tongues or regional languages as the medium of instruction up to Grade 5, with options for Sanskrit and other languages. **It will standardise Indian Sign Language (ISL)**.
- It provides inclusive education by providing support for **Socially and Economically Disadvantaged Groups (SEDGs), children with disabilities, and the establishment of Bal Bhavans**.
- It aims to raise the Gross Enrolment Ratio from 26.3% to 50% by 2035, adding 3.5 crore new seats.
- It emphasizes research by establishing the National Research Foundation to enhance research culture and capacity.
- It provides a platform for language preservation by supporting Indian languages through the **Institute of Translation and Interpretation (ITI)** and strengthens language departments.
- It encourages international collaborations and the entry of top-ranked foreign universities.

- It targets increasing public investment in education to 6% of GDP.
- It introduces **PARAKH (Performance Assessment, Review, and Analysis of Knowledge for Holistic Development)** for competency-based and holistic assessments.
- It establishes the **Gender Inclusion Fund to promote gender equality in education and support initiatives for disadvantaged groups.**
- It creates **Special Education Zonestocater to the needs of disadvantaged regions and groups, reinforcing the commitment to equitable access to quality education.**

Major Initiatives under NEP 2020:

- **PM Schools for Rising India (SHRI)** is a centrally sponsored scheme that aims to provide high-quality education in an **equitable, inclusive, and joyful school environment.**
 - National Initiative for **Proficiency in Reading with Understanding and Numeracy (NIPUN) Bharat Mission** aims to create an enabling environment to ensure the **universal acquisition of foundational literacy and numeracy**, so that every child achieves the desired learning competencies in reading, writing, and numeracy by the **end of Grade 3, by 2026-27.**
 - **PM e-VIDYA** aims to **promote online education and digital learning** by providing various e-learning platforms like DIKSHA and offering e-books and e-contents to students across the country.
 - **National Curriculum Framework for Foundational Stage (NCF FS)** and **Jadui Pitara** provide play-based learning teaching material tailored for children between the age group of 3 to 8 years
 - **National Initiative for School Heads' and Teachers' Holistic Advancement (NISHTHA)** is a capacity-building program for **teachers and school principals in India.**
 - **National Digital Education Architecture (NDEAR)**, is an architectural blueprint that provides a set of guiding principles and building blocks to enable the creation of digital technology-based applications in education.
 - **National Credit Framework (NCrF)** and **National Higher Education Qualification Framework (NHEQF)** facilitate credit transfer and academic flexibility.
- NEP 2020 supports Indian universities in establishing campuses abroad and inviting foreign institutions to operate in India. Memoranda of Understanding (MoUs) have been signed for the establishment of **IIT campuses in Zanzibar and Abu Dhabi**, reflecting India's global educational outreach.

Initiatives under Shiksha Saptah:

- Vidyanjali is an initiative by the **Department of School Education and Literacy**, that connects community members and volunteers with government and government-aided schools through an online portal. It enables alumni, teachers, scientists, and others to contribute services, materials, or expertise to schools across India, enhancing the learning environment by integrating schools, volunteers, and the community in line with NEP 2020 objectives.
- **Tithi Bhojan** is an initiative by people from the community to celebrate important days such as childbirth, marriage, birthdays, etc. by contributing to the Mid-Day Meal Scheme. It is not a substitute for Mid-Day Meal but it supplements or complements Mid-Day Meal.
- Cooking competitions at Block, District, and State levels are organised to promote innovative menus.

NUTRITIONAL SECURITY IN INDIA

GS II – ISSUES RELATING TO POVERTY AND HUNGER

Context: The NSSO's Household Consumption Expenditure Survey (HCES) 2022-23 provides fresh insights into nutritional security in India.

Nutritional Security:

- According to the **Food and Agricultural Organisation**, nutritional security implies **physical, economic, and social access to a balanced diet, clean drinking water, a safe environment, and health care for every individual.**

- According to the **World Bank Report**, despite the sharp decline in extreme poverty in India from 45.9% to 13.4% between 1993 and 2015, India still suffers from a high malnutrition burden.
- **According to NFHS-5 data**, the zero-food prevalence was 30% for infants aged 6-11 months, 13% among 12-17 months old, and 8% among 18-23 months old.

Issues/Challenges associated with lack of Nutritional Security in India:

- The cultivation of rice and wheat often overshadows the production of nutrient-rich crops like millet and pulses, contributing to nutritional insecurity.
- Affordability of nutritious food products, such as green leafy vegetables and, a protein-rich diet, has become difficult for the poor households in India. The increasing wealth inequality, with the top 10% of Indians holding 57% of the national income, has exacerbated nutritional insecurity.
- Many nutrition programs suffer from budget constraints, affecting their scale and effectiveness. India's public health expenditure is still only about 1.3% of its GDP.
- The focus of the Public Distribution Scheme has been limited to ensuring food security and calorie requirements. The need for nutritional development has not been taken into account.
- The nutritional requirements of adolescents and young females in poor and lower-middle-income households are not prioritized. This leads to a malnourished female population and their offspring. For example, the large prevalence of anaemia due to inadequate focus on iron deficiency in the female diet.
- Frequent droughts, floods, and other climate-related events lead to food shortages.
- Child caring practices, including exclusive breastfeeding, and the introduction of complementary food and a diversified diet after the first six months, are not implemented properly. For example, only 55% of children in India were exclusively breastfed in 2015-16.
- Cheaper and easily available junk food has replaced the nutritious food in the dietary intakes of the Indian population. According to a recent Household Consumption Survey, Indians are spending less on cereals and pulses and more on beverages, refreshments, and processed food.

Government Initiatives to Provide for Nutritional Security in India:

- **National Nutrition Mission (NNM), also known as POSHAN Abhiyan** has been launched which aims to reduce stunting and underweight and low birth weight, each by 2% per annum; and anemia amongst children, adolescent girls and women, each by 3% per annum by 2022.
- **AnaemiaMukt Bharat (AMB) Strategy** was launched in 2018 to reduce anaemia prevalence among children, adolescents, and women in the reproductive age group.
- **PoshanVatikas is a programme** to support the development of PoshanVatikas at Anganwadi centres to meet the dietary diversity gap leveraging traditional knowledge in nutritional practices has also been taken up.
- **Integrated Child Development Services provides nutritional** meals, preschool education, primary healthcare, immunization, health check-ups, and referral services to children under 6 years of age and their mothers.
- **Midday Meal Scheme aims to** provide cooked meals to every child within the age group of six to fourteen years studying in classes I to VIII who enrolls and attends the school.

Key findings of the Household Consumption Expenditure Survey (HCES) Report regarding Nutrition Security in India:

- **The average daily per capita calorie Intake (PCCI)** for a healthy life is 2,172 kcal in rural India and 2,135 kcal in urban India. The calorie intake of the poorest 10% of the Indian population is below the average PCCI. The average daily PCCI of 10% poorest population is 1,564-1,764 kcal in rural areas and 1,607-1,773 kcal in urban areas.
- There is variation in calorie intake amongst the 10% poorest population. The average PCCI for the poorest 5% in rural areas is 1,564 kcal, and for the next poorest 5% is 1,764 kcal. In urban areas, the figures are 1,607 kcal and 1,773 kcal, respectively.

SEXUAL HARASSMENT OF WOMEN AT WORKPLACE

GS II – ISSUES RELATED TO WOMEN

Context: The report of the three-member Justice Hema Committee, formed in 2017 was released recently revealing shocking horrid tales of discrimination, exploitation, and sexual harassment of women in the Malayalam film industry which throws light on the issue of sexual harassment of women in the workplace.

Status of Sexual Harassment of Women at Workplace in India:

- According to the **National Crime Records Bureau (NCRB)** data from 2018 to 2022, India reported over 400 cases of sexual harassment at work each year.
- According to the **Centre for Economic Data and Analysis (Ashoka University)** sexual harassment complaints reported under the POSH Act have increased significantly, rising from 161 in 2013-14 to 1,160 in 2022-23.

Causes/Reasons that lead to Sexual Harassment of Women at Workplace in India:

- Due to gender imbalance in workplaces, men often hold more power, which can lead to the exploitation of women. Women may feel forced to tolerate harassment to secure their jobs.
- Reports from the **National Commission for Women (NCW)** show that many workplaces lack proper training on sexual harassment. This lack of awareness about legal rights and procedures hinders effective prevention and handling of harassment cases.
- Many workplaces, especially in **informal sectors**, do not set up Internal Complaints Committees (ICCs) or enforce the 2013 Sexual Harassment of Women at Workplace Act effectively. According to a 2024 survey by The Udaiti Foundation, it is found that 59% of organizations had not established the required ICCs.
- Internal Complaints Committees (ICCs) may fail to be effective due to problems such as poor confidentiality, bias, or interference from powerful individuals which weakens the complaint and resolution process.
- **Many women hesitate to report harassment** due to fear of retaliation, such as job loss or being blacklisted.
- In some industries, especially outdoor and informal ones, the lack of basic facilities like proper toilets and changing rooms increases women's risks and discomfort which can make women more vulnerable to harassment.

Implications of Sexual Harassment of Women at Workplace:

- **It leads to severe emotional distress, including anxiety, depression, and low self-esteem.** They may also experience physical health issues like sleep disorders, high blood pressure, and weakened immune systems.
- It can lead to lower job satisfaction and hinder career growth. **According to a 2019 McKinsey report**, 35% of women in India have thought about leaving or pausing their careers because of harassment.
- It creates a **toxic work environment** that lowers employee productivity as victims may become distracted, miss work, and lose motivation, harming the organization's overall performance. According to World Bank estimates, it costs India \$6 to \$10 billion each year due to its effects on labour force participation and productivity.
- **Companies that ignore sexual harassment can face costly lawsuits and financial penalties. For example, one case resulted in a \$17.4 million damage award.**
- It damages social norms by normalizing violence and unsafe conditions for women, undermining their dignity and empowerment.

Key Findings of Justice Hema Committee Report:

- Women entering the industry often **face pressure to exchange sexual favours for job roles.** The report highlights frequent vulgar comments from men and instances of drunk male co-actors harassing women.
- **Women experience sexual harassment, abuse, and assault** at work while traveling, and in their living spaces, as well as online. Those who reject sexual advances often encounter mistreatment and offensive remarks.
- Many workplaces, especially outdoor ones, lack essential facilities like toilets and changing rooms, which can

lead to health problems such as urinary infections.

- Unauthorized bans and threats of being barred from work are used to silence women in the industry.
- **Gender bias is widespread**, with significant pay disparities between men and women. Additionally, junior artists often face harsh conditions, working up to 19 hours a day.
- **Many employment contracts** are not honoured, leading to actors and technicians receiving less pay or no payment at all.

STATE OF HEALTHCARE IN RURAL INDIA

GS II – HEALTH

Context:The 'State of Healthcare in Rural India, 2024' Report was jointly undertaken by the non-government organisation (NGO) Transform Rural India and the Development Intelligence Unit, which works in the healthcare sector.

Key Highlights of the State of Healthcare in Rural India Report 2024:

- The government health **insurance coverage** is only about 50% of rural households in the country while 34% lack any health insurance coverage at all. About 61% of surveyed households do not have life insurance.
- It revealed that there is a **lack of diagnostic facilities** in the rural areas mostly because of a shortage of trained personnel. Only 39% of respondents have access to a diagnostic facility within commutable distance while 90% of respondents do not undergo routine health checkups unless recommended by a doctor.
- **Access to subsidised medicines from Pradhan Mantri Jan Aushadhi Kendras** is for only 12.2% of households. Only 26% of respondents had access to a government medical store located within the premises of a health facility that provides free medicines and 61% had access to a private medical store within commutable distance.
- **About 20% of the households reported no drainage system in their villages and only 23% had a covered drainage network system in their villages.** 43% of households did not have any scientific system of waste disposal and they ended up dumping their waste everywhere. Only 11% burn the dry waste and convert their wet waste into compost, while 28% reported that the local panchayat has made plans to collect household waste.
- **Elderly care is needed constantly** for about 73% of the households and the majority (95.7%) prefer family caregivers, predominantly female (72.1%). Only 3% of households have engaged in paid external caregivers and 10% rely on neighbourhood support in the absence of family caregivers.
- **The majority of caregivers for pregnant women include** husbands (62.7%), mothers-in-law (50%), and mothers (36.4%).
- About 45% of the respondents across genders most of the time have anxiety and worry that impacts mental health much more among the older population than the younger ones.

Need for Robust Rural Healthcare Infrastructure:

- **Properly equipped healthcare facilities in a proximate range** would ensure that common health concerns, such as viral diseases, maternal issues, child health problems, etc. are addressed in an expedited manner.
- With more than 60% of India's population living in rural areas, the importance of rural healthcare facilities cannot be overemphasised.
- Currently, the **out-of-pocket expenditure** in India is more than 60% which places a heavy burden on the rural poor. Robust health infrastructure will help in treating the disease at the primary level. It will save a lot of money and resources that are further spent at secondary and tertiary level health care.
- **The region comprises people who are not as affluent and resilient as their urban counterparts.** Their ability to absorb extreme situations like a pandemic is very less due to inadequate financial cushions.
- The rural sector provides human resources for sectors such as retail, construction, manufacturing, hospitality, education, and transportation.

Reasons for Poor Healthcare Infrastructure in Rural India:

- **India suffers from a severe lack of qualified healthcare professionals in rural areas.**
- India spends way too little on health in comparison to other developed nations like the U.S. and Japan. Indian government expenditure on health remains low at around 1.28% of GDP. Rural health infrastructure often receives a smaller share of this budget, leading to underfunded facilities.
- **The doctor-patient ratio in India is approximately 1:1456, which is below the World Health Organization (WHO) recommended ratio of 1:1000. It is worse in rural areas, where the ratio is significantly higher due to a shortage of doctors.**
- The rural masses are not well aware of the facilities provided in the nearby centres.

UNIFORM CIVILCODE (UCC)**GS II –SIGNIFICANT PROVISIONS OF THE INDIAN CONSTITUTION**

Context: The PM in his Independence Day address called for promulgating a uniform civil code in the country.

Uniform Civil Code (UCC):

- It provides for the formulation of one law for the entire country, which would apply to all religious communities in their personal matters such as marriage, divorce, inheritance, adoption, and succession.
- Currently, Indian personal law is complex, with each religion adhering to its specific laws.

Arguments for UCC:

- **UCC is enshrined in the Constitution's Directive Principles, aiming to create a uniform legal framework for civil matters.**
- UCC ensures that civil laws are not influenced by religious beliefs, thus upholding the principle of secularism.
- UCC fosters national unity by transcending religious and community divisions, UCC promotes common citizenship and strengthens national unity.
- **UCC eliminates discriminatory practices in personal laws, promoting gender equality and women's rights.**
- **UCC simplifies legal procedures associated with marriage, divorce, and inheritance.**
- Codifying laws can establish universal principles for fairness and streamline legal processes, promoting access to justice and resolving disputes effectively.

Arguments against UCC:

- **UCC threatens diversity and religious freedom as imposing a uniform code may undermine cultural and religious identities and infringe upon the right to religious freedom guaranteed under Article 25.**
- UCC implementation without consensus from diverse communities may lead to social unrest and resistance.
- Some argue that UCC could encroach upon states' legislative powers, disrupting the principles of cooperative federalism under **Schedule 7 entry 5**.

Way Forward:

- The government should engage in constructive dialogues with all stakeholders, including religious leaders and community representatives, to garner support and address concerns.
- Implement UCC in a non-partisan and inclusive manner, avoiding its use as a tool for political gains.
- **Conduct awareness campaigns to educate the public about the rationale behind UCC and its benefits, involving government, civil society, and media.**
- Review existing personal laws to align UCC with principles of justice, equality, and non-discrimination, ensuring fairness for all.

Note:

- **The Secular Civil Code mentioned by the PM** is in line with the arguments made by BR Ambedkar in the

Constituent Assembly. When Article 35 of the draft Constitution, which called for a uniform civil code, came up for discussion before the Assembly, Ambedkar took the firm stand that it shouldn't get mired in communal discourse. He argued that until the Sharia Act was passed by the British colonial government in 1937, most Muslims in provinces of British India followed Hindu law.

- **The NWFP (today's Khyber-Pakhtunkhwa) was not subject to Sharia until 1935.** Until 1937, in the rest of India, including provinces where Muslims lived in large numbers like the United Provinces, Central Provinces, and Bombay, they were governed in matters of succession and others by existing Hindu laws.
- **Ambedkar refers to a law in the North Malabar region called Marumakkathayam Law** that applied to both Hindus and Muslims by which matriarchy was followed by the people of Kerala.
- **In Sarla Mudgal vs Union of India (1995),** the Supreme Court had held that "when more than 80 percent of the citizens have already been brought under the codified personal law, there is no justification whatsoever to keep in abeyance, any more, the introduction of Uniform Civil Code for all citizens".
- **In the John Vallamattom vs Union of India case in 2003,** the SC had again said "It is a matter of regret that Article 44 of the Constitution has not been given effect to".

WOMEN'S SAFETY IN INDIA

GS II –ISSUES RELATED TO WOMEN

Context: A 31-year-old postgraduate doctor was allegedly raped and murdered inside a seminar hall of the hospital in Kolkata sparking national outrage.

Causes/Reasons Behind Lack of Women's Safety:

- **India is deeply entrenched in patriarchal culture which perpetuates the belief in male superiority and normalizes violence against women.**
- The problem of objectification of women is because of the degenerated portrayal of women in media and entertainment which often leads to increased instances of harassment and violence.
- There exists cultural stigma regarding sexual violence and harassment leading to underreporting of crimes as many women fear societal backlash on account of reporting harassment issues.
- There is a high economic dependency on male family members that exacerbates the vulnerability of women. It becomes difficult to escape domestic abuse due to the lack of financial independence.
- **There is a lack of awareness among women in India regarding the legal protections available for women, such as the Domestic Violence Act, and Sexual Harassment Act.**
- **India faces inadequacies in public infrastructure,** such as poorly lit streets, lack of safe transportation options, and lack of CCTVs that increase the vulnerability of women to crime.

Issues/Challenges in Ensuring Women's Safety:

- The public confidence in law enforcement is undermined due to delayed justice due to prolonged legal processes and lenient punishments for sexual offenders.
- **There is laxity in conviction in sexual harassment cases due to a lack of time-bound investigations and ineffective collection of forensic evidence in sexual assault cases.**
- There have been instances of no proper implementation of the Sexual Harassment of Women at **Workplace (Prevention, Prohibition, Redressal) Act, 2013.**
- **There is ineffective utilisation of public funds even though the budgetary allocation of the Nirbhaya Fund has increased by 100% between 2013 to 2022, less than half of the allocation to the fund has been used.**

Government Initiatives Regarding Women's Safety:

- The Government has set up the Nirbhaya Fund for projects for the safety and security of women.
- The Ministry of Home Affairs has launched an Investigation Tracking System for Sexual Offences to monitor and track time-bound investigations in sexual assault cases per the Criminal Law (Amendment) Act of 2018.
- **The National Database on Sexual Offenders facilitates the investigation and tracking of sexual offenders across the country by law enforcement agencies. NDSO has data on over 5 lakh sexual offenders.**
- **One-Stop Centers has been launched to provide integrated support and assistance to women affected by violence.**

- **Universalization of Women Helpline** to provide 24-hour emergency and non-emergency response to women impacted by violence.

Note:

- **“The day a woman can walk freely on the roads at night, that day we can say that India has achieved independence “- Mahatma Gandhi**
- According to the NCRB Report 2023, crimes against women in India have increased by 4% in 2022, with reported cases rising from 4,28,278 in 2021 to 4,45,256 in 2022. The report indicates that the crime rate per lakh women population rose from 64.5 in 2021 to 66.4 in 2022.
- The National Family Health Survey-5 found that nearly one-third of women aged 15-49 in India have experienced some form of violence.

PAPER 3

ARTIFICIAL INTELLIGENCE IN AGRICULTURE

GS III – AGRICULTURE

Context: The Government of India launched the AI-based National Pest Surveillance System (NPSS) that will help farmers connect with agriculture scientists and experts on controlling pests using their phones.

Artificial Intelligence (AI):

- It is the emulation of human intelligence in devices that have been designed to behave and think like humans.

Applications of AI in Agriculture:

- AI technologies, such as **machine learning and satellite imagery**, can analyze soil conditions, weather data, and crop health to optimize irrigation, fertilization, and pest control.
- AI can predict **crop yields and help farmers make informed decisions**.
- AI-enabled agriculture insurance can help in the faster assessment of damaged crops and faster reimbursement of insurance to the farmers.
- AI-powered image recognition can identify pests and diseases in crops, allowing for timely intervention.
- AI can **streamline supply chain operations, reducing post-harvest losses**.
- AI-driven robots and drones can assist in tasks like planting, weeding, and harvesting, addressing labor shortages.
- AI can analyze market trends, helping farmers make informed decisions on when and where to sell their produce.

Major Artificial Intelligence (AI) Interventions in Agriculture:

- **Development of 'Kisan Suvidha' mobile application to facilitate dissemination of information to farmers on the critical parameters** viz., weather; market prices; plant protection; input dealers (seed, pesticide, fertilizer); farm machinery; extreme weather alerts; soil health card; cold storages & godowns; veterinary centres and diagnostic labs.
- **Development of 'Farm Machinery Package for Different Agro-Climatic Zones in India'** mobile application, which gives information on farm machinery packages available for state-wise, agro-climatic zone-wise, district-wise, cropping pattern, and power source-wise.
- Development of **'My Cipheth'** mobile application to help farmers get precise information regarding the **Indian Council of Agriculture Research (ICAR)** developed post-harvest technologies, products, and machinery.
- Development of **'mKisan Portal'** for sending advisories on various crop-related matters to the registered farmers through SMSs.

BALLAST WATER MANAGEMENT

GS III – Environmental Pollution

Context: In India, scientists have recorded nearly 30 invasive species coming from ship ballast water. Among the most harmful in recent times is the charru mussel, *Mytella Rigata*.

Ballast Water:

- Ships require a certain level of **immersion in the sea for stability**. To maintain this, when cargo is discharged and the ship rises in the water, seawater, known as ballast water, is taken into tanks onboard. Conversely, when cargo is loaded and the ship sinks lower in the water, the ballast water is pumped out.

Significance of Ballast Water:

- **It provides stability as it lowers the centre of gravity of the ships, preventing them from capsizing.**
- **It enhances the ship's ability to navigate safely through different sea conditions, in particular rough sea conditions.**
- It compensates for changes in cargo load, fuel consumption, and other weight variations during a voyage.
- It is used to add weight so that a ship sinks low enough in the water to pass under bridges and other structures.

Issues/Challenges posed by Ballast Water:

- It has been associated with the introduction of invasive species, as they contain a wide range of aquatic organisms, including microorganisms, larvae, and small species. **Invasive species outcompete native species, disrupt ecosystems, and lead to declines in biodiversity.**
- The invasive species introduced through ballast water leads to ecological disruption by altering food webs, and habitats. It leads to a decline in economically and ecologically important native species.
- It leads to algal blooms and oceanic pollution as ballast water contains pollutants such as oil, heavy metals, and chemicals.
- It increases the **spread of diseases through pathogenic microorganisms in ballast water**.
- It has economic consequences for industries such as fisheries, aquaculture, tourism, and water supply.

Initiatives/Measures taken to regulate Ballast Water:

- **The Ballast Water Management (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.
- Ships constructed after the implementation of the Ballast Water Management Convention, have functional ballast water management systems. These ships dose the ballast water with chemicals so that all the water is rendered free of any biological organism before the water is pumped out during the loading of cargo.
- **Ships reaching Australian and New Zealand ports are subjected to rigorous checks, including ballast water management systems.**

Note:

- India is not a signatory to the Ballistic Water Management Convention so the discharge of ballast water brought in from other countries is not subject to checks or regulation.

CLIMATE CHANGE AND SMALL ISLAND DEVELOPING STATES (SIDS)

GS III – Climate Change

Context: Panama became the first nation to evacuate about 300 indigenous Guna families from the Gardi Sugdub Island to mainland Panama due to concerns over rising sea levels.

Small Island Developing States (SIDS):

- They are a **group of small island countries and territories that share similar sustainable development challenges and face similar social, economic, and environmental vulnerabilities.**
- The three geographical regions in which **SIDS are located are in the Caribbean, the Pacific, and the Atlantic, Indian Ocean, and South China Sea (AIS).**
- **Some examples of SIDS are the Maldives, Seychelles, Marshall Islands, Solomon Islands, Suriname,**

Mauritius, Papua New Guinea, Vanuatu, Guyana, Singapore, etc.

- They were recognized as a special case both for their environment and development at the 1992 United Nations Conference on Environment and Development.

Effect of Climate Change on SIDS:

- **They face the threat of forceful displacement due to coastal erosion and submergence.** It is estimated that, by 2050, half of Tuvalu's capital will be flooded by tidal waters.
- **They face economic challenges as ocean acidification impacts marine ecosystems like coral reefs and affects tourism, fisheries, etc.** From 1970 to 2020, SIDS lost US\$153 billion due to weather extremes, a significant amount relative to the average GDP for SIDS, \$13.7 billion.
- There has been a disproportionate impact on the indigenous population as they fear the loss of connection to cultural roots, traditional livelihood, and way of living.
- SIDS accounts for only 1% of global emissions and holds the least responsibility for the climate crisis, yet suffers from its worst impacts.
- **There is a lack of access to economic prowess and technological advances to tackle climate change.** Despite being disproportionately affected by climate change, they had access to a mere US\$1.5 billion out of the US\$100 billion pledged in 2019.
- People living in SIDS face adverse impacts on health due to heat waves and increased outbreaks of vector-borne diseases.
- **Climate change and sea-level rise are likely to threaten freshwater resources through saltwater intrusion within freshwater aquifers.**
- It has adverse effects on agriculture and food security as these sectors are affected by heat stress, changes in soil moisture and evapotranspiration, and changes in extreme weather events, such as tropical cyclones, floods, and droughts

Global Measures Related to SIDS:

- **The Alliance of Small Island States (AOSIS) is an intergovernmental organization** that plays an integral role in carrying out advocacy for small island states and influencing international environmental policy.
- Global Conference on the Sustainable Development of Small Island Developing States (1994) (Barbados Programme of Action) addresses the particular vulnerability of SIDS to climate change, climate variability, and sea-level rise featured prominently.
- **The Climate Promise Initiative by UNDP helps SIDS to prepare enhanced Nationally Determined Contributions (NDCs).**
- **Progressive Platforms Initiative empowers SIDS by building diplomatic, legal, and technical capacity for improved climate negotiations.**
- **Small Island Developing States Accelerated Modalities of Action (SAMOA) Pathway** aims to address the unique challenges faced by SIDS and to support their development UN Resolution on Climate Justice of 2023 aims to secure a legal opinion from the **International Court of Justice (ICJ) on the "Obligations of States in respect of Climate Change"**.

DAM SAFETY IN INDIA**GS III –INFRASTRUCTURE**

Context: The snapping of crest gate No. 19 in Tungabhadra Reservoir has shattered the hopes of farmers in the Tungabhadra command area in Koppal, Raichur, Ballari, and Vijayanagara districts.

Dam:

- It is an artificial barrier and its appurtenant structure (barrage, weir) constructed across rivers or their tributaries to impound or divert water.
- It is constructed to store water for drinking, irrigation, and industrial use; flood control; hydropower generation; inland navigation; recreation, etc.

Issues/Challenges associated with the Dam Safety:

- Dams usually have a defined lifespan beyond which they may become unsafe or uneconomic.
- Large dams in India are often built in seismically active areas, making them vulnerable to earthquakes. For example, the earthquake in Bhuj (Gujarat) in 2001, led to liquefaction in the foundation of Chang Dam.
- It poses danger through floods. For example, Sikkim's highest dam Chungthang Dam was washed away during flash floods caused by a glacial lake outburst of South Lhonak Lake.
- **Overtopping failures result from the erosive action of water on the embankment.**
- Abrasive sediments can damage hydroelectric turbines and other dam components. It also reduces the storage capacity of dams.
- **It faces the challenge of irregular maintenance and upkeep due to poor finances.**
- Few dams are non-compliant with legislative mandates. For example, the CAG audit report of Gandhi Sagar in Madhya Pradesh highlighted that the SDSO did not comply with recommendations by the CWC on remedial measures.

Government Initiatives Related to Dam Safety:

- **National Register of Large Dams (NRLD) is the nationwide register of Large Dams compiled and maintained by CWC.**
- **The 2nd and 3rd Phase of the Dam Rehabilitation and Improvement Project (DRIP) envisages comprehensive rehabilitation of 736 dams across 19 States. It will receive loans, both from the World Bank and the Asian Infrastructure Investment Bank (AIIB), for disbursement among States and three central agencies (CWC, Damodar Valley Corporation & Bhakra Beas Management Board).**
- The National Centre for Earthquake Safety of Dams will enhance the Structural and Earthquake Safety of Dams in India.
- India Water Resource Information System (WRIS) provides a single window solution for all water resources (including dams) data and information on the GIS framework.
- **Dam Health and Rehabilitation Monitoring Application (DHARMA) captures important data for all dams. It is a move towards the application of Artificial Intelligence (AI) in dam safety.**
- The seismic hazard analysis information system (SHAISYS) tool aims to ascertain the extent of seismic forces and their implication on the safety of the dam structures.
- Some states have created **Dam Safety Review Panels for comprehensive audits of their dams.**

Major Dam Failures across the globe include:

- Banqiao dam failure in China in 1975 resulted in the collapse of 60 other downstream dams and killed more than 80,000 people.
- Machchu Dam failure in Morbi, Gujarat in 1979 claimed over 2,000 lives.
- The Derna Dam collapse in Libya in 2023 claimed over 3,800 lives.

DEPOSIT GROWTH**GS III –BANKING**

Context: Amid concerns over the shift of household savings from banks to alternative investment avenues, resulting in slower deposit growth compared to credit, the Reserve Bank of India (RBI) Governor asked lenders to garner deposits through innovative product offerings and use their wide branch network.

Issues/Concerns Regarding Deposit Growth:

- **The credit-deposit ratio has reached its highest in 20 years, with bank deposits growing at 11.1% year-on-year compared to credit growth of 17.4%. The growth of bank deposits has not kept pace with the surge in loan demand, creating a widening gap between credit and deposit growth.**
- Banks are facing structural liquidity challenges as they are increasingly using short-term deposits and other

liability instruments to meet credit demand.

- Households are moving their savings from bank deposits to mutual funds, stocks, insurance, and pension funds. This shift, along with declining net financial assets (from 11.5% of GDP in 2020-21 to 5.1% in 2022-23) and surging inflation, contributes to slower deposit growth. The strong performance of the Indian stock markets has led investors to favour equities over traditional bank deposits.
- **This shift has contributed to the slower growth in deposits, as evidenced by the doubling of the mutual fund industry's assets under management (AUM) from Rs 24.79 lakh crore in April 2019 to Rs 57.26 lakh crore in April 2024.**
- A portion of mobilized deposits is tied up in regulatory requirements like the Cash Reserve Ratio (CRR) and Statutory Liquidity Ratio (SLR), leaving banks with fewer lendable funds and increasing competition for deposits. The growing mismatch between deposit and credit growth could threaten the banking system's stability if not addressed with proactive measures.
- Banks face competition not only from each other but also from high-return equity-linked products. Investors are increasingly shifting to equity markets due to strong performance and rising financial literacy.
- **Banks have attempted to bridge the credit-deposit gap by relying more on Certificates of Deposit (CDs).** However, this increases their sensitivity to interest rate movements and complicates liquidity risk management, making the system more vulnerable to market fluctuations.
- **Proactive liquidity management is essential.** The RBI is reviewing the Liquidity Coverage Ratio (LCR) framework to address these emerging challenges, with plans for public consultations to refine the approach.

Measures by Banks to Increase Deposit Growth:

- The banks should concentrate on their primary functions of deposit mobilisation and lending, stressing that these activities are the bread and butter of banking. Expanding branch networks, especially in underserved or rural areas, can help banks tap into new customer segments, increasing overall deposit inflows.
- **Banks should develop attractive and innovative products to encourage** them to be aggressive in deposit mobilisation leveraging the liberty given by the RBI to manage interest rates.
- Banks can consider reducing the lock-in period for tax-saving fixed deposits from five years to three years, making them more competitive with alternative investment options like mutual funds and equity-linked savings schemes (ELSS).
- **Banks can use data analytics to offer personalised savings and deposit products,** making it easier for customers to manage and grow their savings. Mobile banking apps with user-friendly interfaces and financial planning tools can encourage more deposits.
- Customer relations should be strengthened through targeted marketing campaigns, and loyalty programs can encourage existing customers to increase their deposits and attract new customers.

DNA PROFILING

GS III –SCIENCE AND TECHNOLOGY

Context: Recently, the Madras High Court overruled a Protection of Children from Sexual Offences (POCSO) Act, 2012 conviction has reignited debate on the reliability of Deoxyribonucleic acid (DNA) profiling in legal cases.

DNA Profiling:

- **DNA is deoxyribonucleic acid, and it is genetic material present in the nuclei of cells in living organisms.**
- **DNA is present in the nucleus of a cell as a double helix, supercoiled to form chromosomes along with intercalated proteins.**
- DNA Profiling identifies individuals by analysing unique regions of their DNA. While human DNA is 99.9% identical, the remaining 0.1% includes unique sequences called Short Tandem Repeats (STRs), which are crucial for forensic investigations.
- **It focuses on specific regions called genetic markers, with STRs being the preferred markers due to their variability among individuals, except monozygotic twins (identical twins).**

Significance of DNA Profiling in the Justice System:

- It helps in forensic cases as DNA profiles from evidence are compared with known or reference samples. The results of this comparison can lead to three possible outcomes, the DNA profiles are indistinguishable, suggesting a common source, or the profiles differ, indicating different sources, or the data does not provide a clear result.
- **It provides statistical support when there is no conclusive proof even if profiles match; instead, experts provide a random occurrence ratio indicating how often similar profiles may appear in the population.**
- **The Madras High Court and the Law Commission of India have highlighted that a DNA match does not conclusively prove identity.** The random occurrence ratio indicates how frequently a particular DNA profile might appear in the population, which may not be sufficient to establish guilt beyond a reasonable doubt.

Limitations of DNA Profiling:

- It can lead to environmental stress and sample degradation due to incomplete or degraded DNA samples.
- DNA profiling is a complex process that requires precise techniques and conditions. Issues such as contamination, improper handling, or delays in testing can affect the reliability of the results.
- DNA analysis can be expensive, limiting its accessibility in some cases.
- While DNA evidence is a powerful tool, it should not be viewed as infallible. Courts must consider DNA evidence alongside other corroborating or contradicting evidence to ensure a fair and just verdict.

Legal Provisions Related to DNA Profiling in India:

- **Article 20(3) of the Indian Constitution** protects individuals from being forced to testify against themselves, ensuring protection against self-incrimination. Article 21 safeguards the right to life and personal liberty, prohibiting unauthorised interference.
- **Section 53 of the Code of Criminal Procedure of 1973 (CrPC)** authorises DNA profiling of suspects at the investigation agency's request. Section 53A specifically allows DNA profiling for rape suspects. The Bharatiya Nagarik Suraksha Sanhita (BNSS) 2023 replaced the Code of Criminal Procedure (CrPC) of 1973.
- Sections 45-51 of the Indian Evidence Act of 1872 pertain to the admissibility of expert testimony, including DNA evidence, in court.
- **In Pattu Rajan v. State of T.N. Case of 2019**, the Supreme Court considered that the probative value of DNA evidence varies depending on the facts and circumstances of the case, and the weight accorded to other evidence on record, whether contrary or corroborative. It emphasised that DNA evidence, though increasingly accurate and reliable, is not infallible, and the absence of such evidence should not lead to an adverse inference against a party, especially in the presence of other cogent and reliable evidence.
- **In the Sharda vs. Dharmpal Case of 2003**, the Supreme Court upheld the authority of marital courts to mandate medical examinations including DNA profiling, without violating Article 21.
- **In Das @ Anu v. State of Kerala Case of 2022**, the Kerala High Court held that the right against self-incrimination under Article 20(3) applies only to testimonial evidence, and drawing DNA samples in a criminal case, especially a sexual offence, does not violate this right. It also noted that Section 53A of the CrPC empowers the police to send the accused to a medical practitioner to collect samples.
- **The 271st Law Commission the Indian Law Commission** proposed comprehensive legislation for DNA profiling, leading to the DNA Technology (Use and Application) Regulation Bill of 2019. It urged for a unique regulatory framework to prevent misuse and restrict DNA profiling to legal uses only.

HORTICULTURE SECTOR IN INDIA

GS III –AGRICULTURE

Context: The Union Cabinet approved the Clean Plant Programme (CPP) with a substantial investment of Rs.1,765.67 crore which is set to revolutionize the horticulture sector in India and is expected to set new standards for excellence and sustainability.

Horticulture Sector in India:

- Indian horticulture sector contributes about 33% to the agriculture Gross Value Added (GVA) while using only 13.1% of the gross cropped area.
- The area under horticulture crops has risen from 24 million hectares to 28.63 million hectares from 2013-14 to 2023-24.
- **India ranks first in the production of several crops like Banana, Lime, Lemon, Papaya, and Okra.**
- India is the second-largest producer of fruits and vegetables in the world after China.
- India exported fresh fruits worth \$1.15 billion, while it imported fruits worth \$2.73 billion in the financial year 2023-24.

Significance of the Horticulture Sector in India:

- It promotes crop diversification which has multiple benefits such as soil conservation, the promotion of resilient agriculture, and organic farming which helps to increase farmers' income.
- **It is labour-intensive sector that provides significant livelihood opportunities across various stages of production, processing, and marketing.**
- The increase in the production and consumption of fruits and vegetables helps in combatting the challenge of malnutrition and chronic hunger.
- It diversifies the export basket which creates better opportunities for agriculture trade and expands markets for Indian produce.
- **It has a high potential for value addition as it creates forward and backward linkages and supports the food processing industry.**
- Horticulture crops need relatively less water than food crops and are more resilient to climate change.
- It unlocks immense potential for the agri-inputs sector that comprises seeds, agrochemicals, and fertilizers.

Issues/Challenges faced by the Horticultural Sector in India:

- **It faces challenges due to constant pests, fungal infections, and bacterial blights.** For ex- Blight fungus destroying potato exports, and bacterial blights affecting pomegranate orchards.
- It results in a lack of economies of scale of production, leading to higher production costs and reduced-price competitiveness because of fragmented landholdings and low irrigation coverage.
- **It witnesses high post-harvest losses with 30- 35% of the fruits and vegetables perishing at various stages like harvesting, storage, grading, transport, packaging, and distribution.** Only 2% of these crops are processed into value-added products.
- It lacks adequate post-harvest and marketing infrastructure like processing units, packaging and grading facilities, cold storage facilities, refrigerated transport vehicles/ containers, storage, and phytosanitary facilities.
- **The Indian horticultural crop processing units are dominated by small-scale units** with an installed processing capacity of 50 tons to 250 tons a year. In comparison, the MNCs' food processing capacity is 05 to 30 tons per hour. **This results in low Indian exports of horticultural produce** as compared to other horticulturally rich countries like China, Brazil, USA, Italy, Spain, Mexico, Iran, Philippines, Turkey, and Thailand.

Government Measures to Improve Horticulture Sector in India:

- **Mission for Integrated Development of Horticulture (MIDH) is a centrally sponsored scheme** for the holistic growth of the horticulture sector. It covers fruits, vegetables, root and tuber crops, mushrooms, spices, flowers, aromatic plants, coconut, cashews, and cocoa.
- **Coordinated programme on Horticulture Assessment and Management using geoinformatics (CHAMAN)** aims to develop and firm up scientific methodology for estimation of area and production under horticulture crops by using remote sensing and sample survey techniques.
- **Clean Plant Programme** aims to enhance the quality of fruit crops across the nation by providing disease-free mother plants of horticultural crops.
- **Horticulture Cluster Development Programme** is a central sector programme aimed at growing and developing identified horticulture clusters to make them globally competitive.

- **Mega Food Parks** have been established to increase processing facilities for horticulture crops.

INDUSTRIAL ACCIDENTS IN INDIA

GS III–DISASTER MANAGEMENT

Context: The blast at pharma company Escientia’s plant in the Atchutapuram Special Economic Zone (SEZ) in Anakapalli district, Andhra Pradesh, is the worst industrial accident in the region in recent times. It occurred due to a leak of the chemical/solvent MTBE (Methyl tert-butyl ether) which is highly flammable and its vapour can also cause skin and eye irritation.

Factors Contributing to Industrial Accidents in India:

- Redundant regulations, including 15 Acts and 19 Rules, **lack a unified approach for the chemical industry**. This fragmentation leads to overlapping jurisdictions and loopholes, weakening oversight and enforcement of safety measures.
- The lack of a central database on industrial chemicals and **their risks creates a knowledge gap, hindering hazard assessment** and safety protocol development.
- Boiler operation often falls to untrained, contractual workers, lacking proper safety and emergency response training as **highlighted by IIT Kanpur**. This leads to confusion during accidents and increases risks, especially with hazardous chemicals.
- Cost-cutting by some industries **often neglects safety equipment and infrastructure**, such as proper ventilation and fire safety. IIT Kanpur study (2023) stresses the **need for increased investment in worker safety to reduce industrial accidents**.
- The **Visakhapatnam gas leak** involving benzimidazole raises concerns about maintenance and operations. **In the Neyveli incident**, a boiler being revived unexpectedly blew out, despite **not being operational** and mainly involving a furnace and steam production.

Consequences of Industrial Accidents:

- Industrial accidents result in numerous fatalities and serious injuries. Example: The explosion at a chemical factory in Thane claimed 11 lives.
- Chemical leaks, explosions, and improper waste disposal can cause severe environmental damage (air, water, and soil pollution). For example, the **Bhopal Gas Tragedy of 1984** serves as a horrific event, in which a leak of **methyl isocyanate gas** from a Union Carbide plant resulted in thousands of deaths and long-term health problems for countless others.
- The cost of repairing damage to facilities, compensating victims' families, and treating injured workers can be substantial. A study by the **US Environmental Protection Agency (EPA)** found that chemical accidents can decrease property values in surrounding areas by 5-7%, further impacting the local economy.
- The trauma associated with industrial accidents can have long-lasting psychological effects on survivors, witnesses, and families of victims. Anxiety, depression, and **post-traumatic stress disorder (PTSD)** are common consequences.
- Frequent industrial accidents can erode public trust in regulatory bodies and industries. This can lead to public fear and resistance to new industrial projects.

Legal Safeguards against Industrial Disasters in India:

- **The Public Liability Insurance Act of 1991 (PLIA)** mandates insurance for industries handling hazardous substances. This insurance provides financial relief to those affected by accidents involving these substances.
- **The National Environment Appellate Authority Act of 1997** establishes the **National Environment Appellate Authority (NEAA)**, which hears appeals regarding restrictions placed on certain industrial activities under the **Environment Protection Act, 1986 (EPA)**, ensuring a fair and transparent process.
- **The Hazardous Waste (Management Handling and Transboundary Movement) Rules of 1989** require industries to identify significant accident risks, implement preventive measures, and report any potential hazards to the appropriate authorities.

- The **National Disaster Management Authority (NDMA)** has issued specific guidelines on Chemical Disaster Management. These guidelines provide direction to various authorities for preparing detailed disaster management plans.
- Several other laws and regulations, like the **Factories Act, of 1948**, and the Insecticides Act, of 1968, also play a role in ensuring industrial safety.

International Safeguards against Industrial Disasters:

- **The UN Convention on the Transboundary Effects of Industrial Accidents (1992)** provides a legal framework for **international cooperation** in preventing and responding to industrial accidents.
- **Flexible Framework for Accident Prevention and Preparedness (CAPP) (2006) of UNEP** adopts a flexible approach to help countries, especially developing ones, build programs to prevent and prepare for chemical accidents. It also offers **guidance on creating these programs considering a country's specific needs**.
- **OECD Programme on Chemical Accidents (1990)** focuses on **preventing accidents through information sharing and best practices in chemical safety**.

LANDSLIDES

GS III –DISASTER MANAGEMENT

Context: Extremely heavy rainfall, a fragile ecology particularly vulnerable to landslides, and steadily increasing population pressures all combined to trigger multiple landslides in the Wayanad district of Kerala.

Landslide:

- A landslide can be defined as the **movement of a mass of rock, debris, or earth down a slope**.
- They are a **type of mass wasting**, which denotes any downward movement of soil and rock under the direct influence of gravity.
- Landslide encompasses five slope movement modes: **falls, topples, slides, spreads, and flows**.

Causes/Reasons for India's Vulnerability to Landslides:

- According to the Geological Survey of India (GSI), roughly **13% of India's landmass**, translating to approximately **4.2 lakh km²**, is prone to landslides. This encompasses almost all hilly regions spread across 15 states and 4 Union Territories.
- **Natural causes** like **heavy rainfall** are the most common trigger for landslides in India. **Earthquakes** can also trigger landslides but are less frequent.
- The **Northeast region** bears the brunt of India's landslide vulnerability. Around **42% of the country's total landslide-prone area** falls within this region, concentrated in hilly states like **Meghalaya, Mizoram, Assam, and Nagaland**.
- The Northeast region experiences a **disproportionately high frequency** of landslides. During the period **2015-2022**, **10% of all major landslides** in India occurred in the Northeast, translated to an average of 54 major landslides per year in the region.
- In the **Northeastern Himalayas**, the presence of young, weak rocks and steep slopes make it landslide-prone. **Heavy monsoon rains** further weaken the soil which is further affected by deforestation. Sometimes, Earthquakes and climate change add to the region's landslide problems.
- **Human Factors** like **unregulated construction in hilly areas, infrastructure development projects**, and certain agricultural practices can significantly increase the risk of landslides. A recent example is the collapse of a stone quarry in **Aizawl, Mizoram** during Cyclone Remal, which highlights the extent of unregulated construction that can lead to fatalities during landslides.

Issues/Challenges in Mitigating Landslide Risks in India:

- Detailed geological mapping and risk assessments are often lacking, hindering efforts to prioritise mitigation measures.

- Deforestation, unplanned development on slopes, and poor construction practices further increase landslide risks.
- Implementing **robust mitigation measures** like retaining walls, drainage systems, and slope stabilisation can be expensive. India **lacks a comprehensive network of sensors** (rain gauges, tiltmeters, etc.) to detect **early warning signs** of landslides.
- Communities living in landslide-prone areas are **not adequately informed** about the risks and the ways to prepare for them.

Government Initiatives to Mitigate the Risk of Landslides:

- **The National Landslide Risk Management Strategy (2019)** by the **National Disaster Management Authority (NDMA)** outlines a **comprehensive approach to landslide risk reduction** highlighting issues of inadequate **urban planning** and the absence of a comprehensive land use policy.
- Landslide Atlas of India is a detailed resource that documents landslide events in the country's vulnerable areas and includes damage assessments for certain sites. It was developed by the National Remote Sensing Centre (NRSC) under the Indian Space Research Organisation (ISRO), it offers important information and insights related to landslides in India.
- Landslide Risk Mitigation Scheme (LRMS) aims to provide financial support for tailored landslide mitigation projects in vulnerable states, focusing on disaster prevention, mitigation strategies, and research and development for monitoring critical landslides.
- Flood Risk Mitigation Scheme (FRMS) aims to develop flood shelters, river basin-specific early warning systems, and digital elevation maps for flood preparedness and evacuation.
- National Guidelines on Landslides and Snow Avalanches by the National Disaster Management Authority (NDMA) cover hazard assessment, risk management, structural and non-structural measures, institutional mechanisms, financial arrangements, and community participation.

Way Forward:

- The **Madhav Gadgil Committee (2010)** and the **Kasturirangan Committee (2012)** reports, while focusing on the Western Ghats, made some recommendations that can be applied more broadly to landslide mitigation in India:
- The reports proposed **classifying a significant portion** of the Western Ghats as ESZs. This classification **aims to restrict activities like mining, quarrying, and large infrastructure projects** that can destabilise slopes and contribute to landslides.
- These advocated for **promoting sustainable land-use practices** like **agroforestry** and **traditional farming methods** to minimise soil erosion and maintain slope stability.
- The report highlighted the **importance of involving local communities** in landslide risk assessment, mitigation efforts, and disaster preparedness.

Reasons behind the Wayanad Landslide:

- Wayanad witnessed 140mm of rainfall, with some areas reporting more than 300 mm of rainfall which was about five times more than the India Meteorological Department's (IMD) projections. The heavy rainfall has saturated with moisture. The water reaches the rocks by flowing between the soil and the rock layers weakening the force that binds the soil to the rocks and triggering the movement.
- The overflow in the Chaliyar River swept more sediment downstream. This left more rocks and humus vulnerable to being displaced.
- Developmental activities like quarrying, linear infrastructure development, and construction activities have compromised ecosystems' ability to cope with changing natural conditions.
- The practice of monocropping has led to the cut down of large, native trees, which serve to hold the topsoil to the bedrock. The replacement of these native trees with big plantation crops, such as tea and coffee having shallow roots, has increased the vulnerability.
- Climate Change has been leading to gradual warming of the Arabian Sea leading to the formation of a deep cloud system over parts of the Western Ghats.

REFORMS NEEDED FOR INDIA'S ECONOMIC GROWTH**GS III –GROWTH AND DEVELOPMENT**

Context:The Deputy Managing Director of the International Monetary Fund (IMF) emphasized that India needs a more skilled workforce, an increase in women's labour force participation with a critical focus on safety, investment in infrastructure along with more structural changes, especially land and labour reforms to achieve the status of a developed country and an advanced economy.

Key Reforms Needed for India's Economic Growth:

- **India can increase revenues-to-Gross Domestic Product (GDP)** through Goods and Services Tax (GST) by simplifying the tax structure, having fewer tax rates, and broadening the tax base by reducing exceptions, which could potentially raise an additional 1% point of GDP in revenue.
- **The revenues-to-GDP ratio is a way to measure a country's tax revenue** relative to the size of its economy, as measured by GDP. It can provide insight into a country's tax policy, potential taxation, and international comparisons between tax revenues.
- Countries would need to rely on domestic resource mobilisation, as money from international institutions or multilateral development banks will be a fraction of the spending needed. In India's case, increasing fiscal space should occur through raising revenues to GDP rather than reducing overall spending.
- **Expanding the personal income tax base, reducing loopholes in tax exemptions, and improving property tax collection through better technology is crucial for ensuring sufficient progressivity and enhancing revenue generation in India's taxation system. Additionally, effective collection of capital gains and property taxes is essential for bolstering fiscal resources.**
- India can also save money by targeting benefits and subsidies more effectively, such as through tailored fertilizer subsidies based on farm size, as being done as a pilot project in Karnataka. Ensuring subsidies reach the right beneficiaries can significantly impact revenue savings.
- **Enhancing the quality of education and developing a more skilled workforce** are essential for India's economic advancement. This includes improving formal education and skill acquisition to ensure a competitive workforce, especially in comparison to G20 peers.
- Women's participation needs to increase from the current 35% to achieve high-income status. This requires not only creating more opportunities for women but also ensuring their safety in the workplace.
- India needs to create between 10 to 24 million jobs annually over the next decade. This requires substantial efforts in job creation across diverse sectors. Focus on inclusive growth that spans multiple sectors, not just a few industries, to ensure broad-based employment opportunities.
- **Land and labour reforms are also essential for transitioning to a high-income country.** Greater flexibility in labour markets is needed. The 2019 labour codes offer a balance between flexibility and worker protection, but their effective implementation is vital.
- Improving the regulatory environment, enhancing the efficiency of the judicial system, and simplifying business procedures are essential to fostering a conducive environment for economic activity.
- **India must reduce its average tariff rates and become more open to international trade. Lowering trade barriers will enable India to integrate better into global supply chains and enhance its position on the world stage.**
- While India has made significant progress in public and digital infrastructure, there remains a considerable gap. Continued investment in this area is necessary for sustaining economic growth.

REPORT ON CURRENCY AND FINANCE 2023-24**GS III –INCLUSIVE GROWTH**

Context: India's digital economy is poised to constitute a fifth of GDP by 2026 from one-tenth at present, according to the 'Report on Currency and Finance (RCF) for the year 2023-24' released by the Reserve Bank of India (RBI).

Report on Currency and Finance 2023-24:

- **It is an annual publication of the Reserve Bank of India** that covers various aspects of the Indian economy

and financial system with its theme as "**India's Digital Revolution.**"

- It emphasizes how digital technologies are reshaping economic growth, financial inclusion, public infrastructure, and the regulatory landscape while addressing the associated opportunities and challenges.

Key findings from the Report on Currency and Finance 2023-24:

- **India's domestic digital economy**, currently at 10% of GDP, is on track to reach 20% by 2026, driven by the world's lowest data costs and rapid growth in internet users.
- There is an expansion and deepening of financial services due to the evolution and adoption of technological advancements. The potential for expanding financial inclusion in India by application of digital technologies is high because of existing conditions.
- The progress of financial inclusion in India is evident in the Reserve Bank's Financial Inclusion Index, 46% of the population in rural India consists of wireless phone subscribers and 54% are active internet users. More than two lakh gram panchayats have been connected through
- **BharatNet in the last decade, has enabled the provision of services like e-health, e-education, and e-governance in rural areas.**
- The internet penetration in India was at 55% in 2023 but the internet user base has grown by 199 million in the past three years. India's cost per gigabyte (GB) of data consumed is the lowest globally at an average of Rs. 13.32 per GB.
- India has one of the highest mobile data consumptions in the world, with an average per-user per-month consumption of 24.1 GB in 2023. There are about 750 million smartphone users, which is expected to reach about one billion by 2026.
- The digital economy currently accounts for 10% of India's GDP. It is expected to double by 2026 contributing to 20% of GDP, driven by rapid advancements in digital infrastructure and financial technology as digitization is strengthening banking infrastructure and public finance systems which enhances direct benefit transfers and tax collections.
- Indian components such as Aadhaar, Unified Payments Interface (UPI), and DigiLocker have revolutionized service delivery. UPI has seen a tenfold increase in transactions over four years.
- India's Digital Public Infrastructure is making efforts to internationalize by collaborating with other nations to develop digital identity solutions under the Modular Open-Source Identity Platform (MOSIP) programme and interlinkage of the UPI with fast payment systems of other nations like Singapore's PayNow, the United Arab Emirates (UAE) Instant Pay Platform (IPP) and Nepal's National Payments Interface (NPI) for cost-effective and fast remittances.
- **India is sharing the Bechn protocol that enables the creation of open, peer-to-peer decentralized networks for pan-sector economic transactions with nations to provide their public and private services through open, lightweight, and decentralised specifications.**
- **Fintechs are collaborating with banks and non-banking financial companies (NBFCs) as lending service providers.** They are also operating platforms to facilitate digital credit. BigTechs are backing payment apps and lending products as third-party service providers.
- Initiatives like the **Open Credit Enablement Network, Open Network for Digital Commerce, and the Public Tech Platform for Frictionless Credit** are driving the digital lending ecosystem.

TRANSIT ORIENTED DEVELOPMENT

GS III –INFRASTRUCTURE

Context: The government proposed a transit-oriented development plan for 14 large cities with a population of over 30 lakhs.

Transit Oriented Development (TOD):

- It is an **innovative urban paradigm** that **leverages existing and upcoming public transit infrastructure and associated users**, to ensure **sustainable mobility** and optimise land use through **compact mixed-use development**.
- It works on the idea that **economic growth, urban transport, and land use** are more efficient when planned

together.

- It has been successfully implemented in cities like **Stockholm, Copenhagen, Hong Kong, Tokyo, and Singapore.**

Significance of TOD:

- **It boost economic competitiveness** by encouraging higher densities and **clusters jobs** in smaller areas. According to research data, the doubling job density can **boost economic productivity by 5 to 10%.**
- **It plays a major role in creating vibrant and liveable communities** by increasing job opportunities, housing, and amenities closer to transit stations.
- **It helps in the mutual reinforcement of compact urban development and public transit** by bringing more passengers to high-density areas while the **concentration of jobs and housing near stations supports these transport systems.**
- **It makes** neighbourhoods more attractive by increasing real estate values and cities can **use this extra value to fund transit upgrades**, affordable housing, and sustainable growth.
- **It lowers carbon emissions** by reducing car use and increases productivity as it shortens the duration of commutes.
- It can enhance **disaster resilience** by encouraging high-density development in **safer zones** when implemented in areas less prone to natural hazards.

Issues/ Challenges Associated with TOD:

- **It faces complications due to a lack of regional coordination at the metropolitan level** as India's metropolitan areas often have **multiple municipal and state authorities** with differing agendas.
- It requires separate planning processes for land use and transportation which can result in mismatched goals and inefficient TOD development.
- It is not inclusive as it does not take into account the requirements of other sectors of the economy like agriculture and allied services.
- Inadequate regulations may result in either an overconcentration of development in certain areas or underutilization in others which can strain infrastructure in high-density areas while leaving other parts of the city underdeveloped and poorly connected.
- **It may not be suitable for Indian cities because**, in island cities like Hong Kong and Singapore, TOD maximises land use efficiency, allowing more people to live and work in proximity to transit, reducing the need for sprawling development.
- **It may not motivate** people to reduce private vehicle use despite heavy investment in inefficient public transit systems.
- **It may lead to urban sprawl which makes it challenging** to create compact, walkable neighbourhoods.

Three Values (3V) Framework for guiding TOD (World Bank):

- **Node value:** Importance of a station in public transit network based on passenger traffic, connections with other transport modes, etc.
- **Place value:** Quality and attractiveness of the area including diversity of land use, availability of essential services such as healthcare, etc.
- **Market potential value:** Unrealized market value measured by demand (such as the current and future number of jobs in the vicinity) and supply (such as market vibrancy).

Steps taken for TOD in India:

- **The National Transit Oriented Development Policy of 2017** outlines 12 guiding principles like last mile connectivity, mixed land use, interconnected street network, etc., and 9 supportive tools like universal accessibility, PPP, etc.
- **Smart Cities Mission** incorporates TOD as a key component of the mission.
- Efforts are being made to integrate different modes of transport like metro, bus, cycling, etc. to create seamless connectivity in different TOD zones.

PAPER 4

ARTIFICIAL INTELLIGENCE (AI) AND ETHICS

GS IV – CONSEQUENCES OF ETHICS IN HUMAN ACTIONS

Context: The future of Artificial Intelligence (AI) will not be secured by regulation alone. To ensure safe and trustworthy AI for all, we must balance regulation with policies that promote high-quality data as a public good.

Artificial Intelligence (AI):

- It refers to the capability of a computer or robot controlled by a computer to perform tasks that typically require **human intelligence and judgment**.

Ethical AI:

- It refers to the development and deployment of AI systems in a manner that aligns with ethical principles, societal values, and human rights.
- It is also **known as Moral or Responsible AI**.

Artificial Intelligence (AI) and Ethical Issues:

- AI-generated content may raise concerns about preserving the authenticity and integrity of artistic expression, particularly when it is difficult to discern between human-created and AI-generated works.
- There are questions regarding the rights of artists, creators, and participants involved in AI-driven projects, including issues related to intellectual property, ownership, and consent for using personal data or creative contributions.
- AI can revive historical voices or artistic styles, but ethical considerations arise concerning whether such efforts aim to preserve cultural heritage or exploit the identities and legacies of individuals for commercial gain.
- The widespread adoption of AI in creative industries may have implications for human creativity and innovation, potentially leading to homogenization, loss of diversity, or reliance on formulaic approaches.
- The lack of regulatory measures presents challenges in safeguarding privacy and preventing discrimination, necessitating compliance, enforcement, and adaptation to evolving technologies.

Way Forward:

- AI-driven creative processes should ensure transparency and disclosure including clear attribution of AI-generated content and obtaining informed consent from all involved parties.
- The authenticity and integrity of artistic expression should be upheld by acknowledging the contributions of human creators and respecting their rights to control and be properly credited for their work.
- The ethical guidelines and best practices for the ethical use of AI in creative endeavours should be developed by addressing issues such as consent, ownership, fairness, and accountability.
- The regulatory oversight and governance mechanisms should advocate compliance with ethical standards and protect the rights and interests of individuals involved in AI-driven creative projects.

ETHICAL ISSUES IN THE GOVERNANCE OF INFRASTRUCTURE DEVELOPMENT AND PUBLIC SERVICE DELIVERY

GS IV – Ethics in Public Administration

Context: The collapse of more than 15 bridges in Bihar led to the suspension of around 15 engineers for negligence and ineffective monitoring. It highlights the compromised quality of public infrastructure and the failure of the government to ensure quality public service delivery.

Public Service Delivery:

- It is the mechanism through which public services are delivered to the public by local, municipal, or federal governments.
- It acts as a tangible link between government and citizens and promotes national values among citizens.
- It includes services such as sewage and trash disposal, public education, and health services.

Challenges/Issues persistent in public service delivery:

- It faces challenges due to a lack of effective implementation of various service improvement systems, including rules and regulations for civil servants.
- Most reforms and changes cater to administrative reforms at higher levels of bureaucracy leading to neglect of reforms for ethical grassroots bureaucracy.
- Resistance of administration to reforms and change leads to rigidity in administration.
- Political interests prioritized above public interest hinder equitable public service delivery.

Ethical Issues in the governance of infrastructure development:

- Inefficient administrative machinery acts as an obstacle to the effective implementation of development plans.
- Quality of service delivery is neglected due to policy issues.
- Misuse of discretion by public officials leads to the creation of a nexus between officials, contractors, and other stakeholders involved leading to corruption.
- Lack of probity as the mechanism for fixing accountability and ensuring transparency are either absent or not effectively implemented. Public servants are recused from the responsibility of ensuring quality service delivery.
- Attitudinal issues like indifference, and lack of motivation for striving for excellence.

Ethical issues involved in public service delivery:

- Public servants often lack the managerial skills to ensure effective service delivery.
- Public servants prioritize personal gains over their public duty and responsibility. The social status of a public servant leads to problems like patronage, favouritism, etc.
- Unethical usage of power and discretion paves the way for corruption.
- The lack of just and fair treatment of malafide errors weakens deterrence towards corrupt practices.

2nd Administrative Reforms Committee recommended Seven Step Model for Citizen Centricity:

- Define all services that you provide and identify your clients
- Set standards and norms for each service
- Develop the capability to meet the set standards
- Perform to achieve the standards
- Monitor performance against the set standards
- Evaluate the impact through an independent mechanism
- Continuous improvement based on monitoring and evaluation of results

ETHICS AND HUNGER STRIKES

GS IV – Ethics and Human Interface

Context: Hunger strikes have always raised a series of complicated moral questions, such as whether it is appropriate to provide medicine against the will of a person on strike; or if force-feeding could be a dangerous protocol.

Hunger Strike:

- It is a form of protest in which individuals refuse to eat to draw attention to a cause or injustice.
- It aims to bring about change or raise awareness by using the act of self-starvation as a symbol of protest.
- It is used to inspire, dissuade, or pressure others by highlighting injustices or demanding change.
- It is seen as a last resort when other means of protest are unavailable or ineffective.

Evolution of Hunger Strikes:

- It was observed during the rule in pre-Christian Ireland provided for a troscad (fast) was aimed at protesting against an unpayable debt, the object being to bring shame to the creditor.
- The Kalhana's Rajatarangini mentions hunger strike was observed against undesirable royal edicts or taxes.
- It was used by Russian Political Prisoners (1870s) to protest prison conditions.
- Irish Republicans like Thomas Ashe and Terence MacSwiney died during hunger strikes, drawing attention to the Irish independence movement.
- Mahatma Gandhid described fasts as "a great weapon in the armoury of Satyagraha" and undertook this form of protest at least 20 times during the Independence movement.
- Jatin Das (1929) died after a 63-day hunger strike protesting against the inhumane treatment of political prisoners.
- Bhagat Singh and Batukeshwar Dutt protested poor prison conditions, drawing widespread support and media attention.
- Potti Sriramulu undertook a hunger strike leading to the formation of the state of Andhra Pradesh.
- Irom Sharmila protested against the Armed Forces Special Powers Act (AFSPA) in Manipur through her hunger strike.
- Anna Hazare started a hunger strike to exert pressure on the Indian government to enact a stringent anti-corruption law.
- Recently, activist Manoj Jarange-Patil demanded reservations for the Maratha community, and Sonam Wangchuk demanded constitutional safeguards for Ladakh through hunger strikes.

Arguments in Favour of Hunger Strike:

- It represents an expression of personal autonomy and self-determination as it gives individuals the right to make decisions about their own bodies and to protest in a way that they see fit.
- It is a form of free speech as it is a way for individuals to voice their dissent peacefully and it aligns with democratic values and the right to protest.
- It is ethically preferable to violent resistance that can draw attention to injustices without causing harm to others.
- It provides moral high ground as it depends on an individual's willingness to endure personal hardship to fight against the perceived injustice.
- It has the power to draw public and media attention to issues that may otherwise be ignored leading to increased awareness and pressure on authorities to address the grievances being protested.
- It has been used effectively since ancient times in protests such as the suffragette movement, the Indian independence movement led by Mahatma Gandhi, and more recent political prisoners which provides ethical weight to the practice.
- It resonates deeply as a form of protest and sacrifice such as Jaina's practice of Santhara. It has the power to evoke sympathy and solidarity from the community and wider society.

It can challenge power dynamics by putting pressure on those in authority to address the protesters'



Practice Questions



Q1.) With reference to the Dark tourism, consider the following statements:

1. Dark tourism is associated with death, suffering and tragedy.
2. Dark tourism encompasses travel to sites linked to events such as genocide, assassination, incarceration, ethnic cleansing, war, or natural disasters.
3. Chernobyl has become a prominent dark tourism destination with guided tours available.

Which of the statements given above is/are correct?

- a. 1 only
- b. 1 and 2 only
- c. 2 and 3 only
- d. **1,2 and 3**

Q2.) The Bandhavgarh Tiger Reserve, recently seen news is located in

- a. Maharashtra
- b. **Madhya Pradesh**
- c. Tamil Nadu
- d. Assam

Q3.) Consider the following statements about Chimeric Antigen Receptor T (CAR-T) cell therapy

1. CAR-T cell therapies are also called living drugs.
2. Its a form of personalised treatment.

Which of the statements given above is/are correct?

- e. 1 only
- f. 2 only
- g. **Both 1 and 2**
- h. Neither 1 nor 2

Q4.) With reference to the Western Ghats, consider the following statements:

1. The Western Ghats is a mountain range that stretches 5,600 km along the western coast of the Indian peninsula.
2. The Western Ghats was recognized as a UNESCO World Heritage Site in 2012.

3. Anamudi is the highest peak in Western Ghats.

Which of the statements given above is/are correct

- a. 1 only
- b. 1 and 2 only
- c. **2 and 3 only**
- d. 1,2 and 3

Q5.) Ol Doinyo Lengai volcano, recently seen in news, is located in

- a. **Tanzania**
- b. Mozambique
- c. Kenya
- d. Indonesia

Q6.) With reference to the Purchasing Managers ' Index (PMI), consider the following statements:

1. The PMI is a key economic indicator that reflects the prevailing direction of economic trends in the manufacturing and service sectors.
2. It considers key areas such as new orders, inventory levels, production, supplier deliveries, and employment.
3. It helps business leaders, analysts, and investors make informed decisions.

How many of the above given statements are not correct?

- a. Only one
- b. Only two
- c. All three
- d. **None**

Q7.) With reference to the Sariska Tiger Reserves, consider the following statements:

1. Sariska Tiger Reserve is located in Eastern Ghats.
2. Sariska is the first tiger reserve to have successfully relocated Royal Bengal tigers in India.

Which of the statements given above is/are correct?

- a. 1 only
- b. 2 only**
- c. Both 1 and 2
- d. Neither 1 nor 2

Q8.) With reference to the Asset Management Companies (AMCs), consider the following statements:

1. They are financial institutions that pools funds from investors and invests in various financial instruments, such as stocks, bonds, and real estate, to generate returns for the investors in exchange for a fee.
2. The Securities and Exchange Board of India (SEBI) regulates and controls AMCs in India.

Which of the statements given above is/are correct?

- e. 1 only
- f. 2 only
- g. Both 1 and 2**
- h. Neither 1 nor 2

Q9.) With reference to the carry trade in stock market, consider the following statements:

1. A carry trade is a trading strategy that involves borrowing at a low-interest rate and investing in an asset that provides a higher rate of return.
2. It typically involves borrowing in a low-interest rate currency and converting the borrowed amount into another currency which offers a higher interest rate.

Which of the statements given above is/ are correct?

- a. 1 only
- b. 2 only
- c. Both 1 and 2**
- d. Neither 1 nor 2

Q10.) With reference to the e-Rupee (Digital Rupee), consider the following statements:

3. The e-rupee is a digital currency issued by the Reserve Bank of India (RBI).
4. It is available entirely in electronic form and does not leave computer network.

5. It can be used for both person-to-person and person-to-merchant transactions.

How many of the statements given above are correct?

- e. Only one
- f. Only two
- g. All three**
- h. None

Q11.) Which among the following is the largest tiger reserve of India ?

- a. Nagarjunasagar Srisaillam Tiger Reserve**
- b. Manas Tiger reserve
- c. Guru Ghasidas-Tamor Pingla Tiger Reserve
- d. Sariska Tiger reserve

Q12.) Consider the following statements:

1. Neutron stars are the collapsed cores of massive stars that have undergone a supernova explosion.
2. They are among the densest objects in the universe, second only to black holes.

Which of the statements given above is/are correct?

- a. 1 only
- b. 2 only
- c. Both 1 and 2**
- d. Neither 1 nor 2

Q13.) Consider the following statements:

1. The e-Sankhyiki Portal was launched by the Ministry of Finance.
2. The e-Sankhyiki Portal aims to establish a comprehensive data management and sharing system to facilitate the dissemination of official statistics in India.

Which of the statements given above are correct?

- a. 1 only
- b. 2 only**
- c. Both 1 and 2
- d. Neither 1 nor 2

Q14.) Consider the following statements about Great Barrier Reef

1. The Great Barrier Reef (GBR) is located off the northwestern coast of Australia.
2. It is the largest coral reef system in the world, stretching over 2,300 kilometers.

Which of the statement given above is/are correct?

- a. 1 only
- b. 2 only**
- c. Both 1 and 2
- d. Neither 1 nor 2

Q15.) With reference to the Neelakurinji, consider the following statements:

1. Neelakurinji is a tropical hardwood tree.
2. It is found in the shola forests of the Western Ghats.
3. It is classified as "Critically Endangered" on the IUCN Red List.

Which of the statements given above is/ are correct?

- a. 1 only
- b. 2 only**
- c. 1 and 3 only
- d. 1,2 and 3

Q16.) Rakhine State, recently seen in news located in

- e. Bangladesh
- f. Myanmar**
- g. Israel
- h. Ukraine

Q17.) Exercise Udara Shakti 2024, recently seen in news is a bilateral air force exercise between India and

- a. Malaysia**
- b. Thailand
- c. Sri Lanka
- d. Maldives

Q18.) With reference to the Clean Plant Programme (CPP), consider the following statements:

1. The Clean Plant Programme aims to improve the quality and productivity of fruit crops across India.

2. It provides support for large-scale nurseries to develop infrastructure for efficient multiplication of clean planting material.
3. It is implementing by the National Horticulture Board, in collaboration with the Indian Council of Agricultural Research (ICAR).

Which of the statements given above is/are correct?

- a. 1 only
- b. 2 and 3 only
- c. 3 only
- d. 1,2 and 3**

Q19.) St.Martins island, recently seen in news located in

- e. Red Sea
- f. Bay of Bengal**
- g. Caribbean Sea
- h. Arabian Sea

Q20.) With reference to the National Institutional Ranking Framework (NIRF), consider the following statements:

1. The National Institutional Ranking Framework was established with the primary purpose of creating a reliable and comprehensive system to rank higher education institutions in India.
2. It was developed by the Ministry of Education in India.

Which of the statements given above is/are correct?

- a. 1 only
- b. 2 only
- c. Both 1 and 2**
- d. Neither 1 nor 2

Q21.) Identify the tributary of river Krishna

- e. Tungabhadra**
- f. Vaiga
- g. Pennar
- h. Periyar

Q22.) With reference to the Jiyo Parsi Scheme, consider the following statements:

1. The Jiyo Parsi Scheme was initiated by the Ministry of Minority Affairs in 2013 to address the declining population of the Parsi community in India.

2. The Jiyo Parsi Scheme is a Central Sector Scheme.
3. The scheme offers cash assistance to encourage Parsi couples to have children, applicable to all couples irrespective of their financial status.

How many of the above given statements are correct?

- a. Only one
- b. Only two
- c. **All three**
- d. None

Q23.) Consider the following statements about Joint Parliamentary Committee (JPC)

1. A JPC is an ad hoc body comprising members from both Houses of Parliament, roughly in proportion to party strengths in Lok Sabha and Rajya Sabha.
2. Joint committees are established by a motion passed in one House and agreed to by the other.

Which of the statements given above is/are correct

- a. 1 only
- b. 2 only
- c. **Both 1 and 2**
- d. Neither 1 nor 2

Q24.) Which among the following is the highest peacetime gallantry award in India?

- a. Param Vir Chakra
- b. Vir Chakra
- c. **Ashoka Chakra**
- d. Kirti Chakra

Q25.) Consider the following statements

1. Uttarakhand has become the first Indian state to launch a Gross Environment Product Index.
2. The Gross Environment Product Index evaluates both the benefits we receive from the environment and the contributions we make to it.

Which of the statements given above is/are correct?

- a. 1 only
- b. 2 only
- c. **Both 1 and 2**
- d. Neither 1 nor 2

Q26.) Panama Canal connects

- a. Mediterranean Sea to the Red Sea
- b. **Atlantic Ocean to the Pacific Ocean**
- c. White Sea to the Baltic Sea
- d. Indian Ocean to the Pacific Ocean

Q27.) Consider the following statements about forever chemicals

1. They are known for their strong carbon-fluorine bonds.
2. They do not break down easily in the environment or in the human body.

Which of the statements given above is/are correct?

- a. 1 only
- b. 2 only
- c. **Both 1 and 2**
- d. Neither 1 nor 2

Q28.) Consider the following countries:

1. Egypt
2. Chad
3. Libya
4. Eritrea

How many of the above-mentioned countries share border with Sudan?

- a. Only one
- b. Only two
- c. Only three
- d. **All four**

Q29.) With reference to the National Pest Surveillance System (NPSS), consider the following statements:

1. The National Pest Surveillance System is a digital initiative by the Ministry of Agriculture and Farmers Welfare.
2. It leverages Artificial Intelligence (AI) and Machine Learning (ML) to provide timely pest management advisories to farmers across India.
3. The primary goal of NPSS is to reduce farmers' reliance on pesticide retailers and foster a scientific approach to pest control.

Which of the statements given above is/are correct?

- a. 1 only
- b. 2 only
- c. 1 and 3 only
- d. **1, 2 and 3**

Q30.)With reference to the Miyawaki method, consider the following statements:

1. The Miyawaki method was developed by Japanese botanist Akira Miyawaki.
2. This method involves planting native species closely together, which promotes rapid growth and biodiversity.
3. Miyawaki method of plantation helps in reducing urban heat island effects by lowering temperatures in surrounding areas.

How many of the statements given above are correct?

- a. Only one
- b. Only two
- c. **All three**
- d. None

Q31.) Consider the following statements

1. Grasslands cover about 24% of India's total land area.
2. Located in Gujarat, Banni is one of India's largest grassland tracts.

Which of the statements given above is/are correct?

- a. 1 only
- b. 2 only
- c. **Both 1 and 2**
- d. Neither 1 nor 2

Q32.) Consider the following countries

1. Poland
2. Turkey
3. Lithuania
4. Latvia

How many of the above countries are members of NATO?

- a. 1 only
- b. 2 only
- c. 3 only
- d. **All four**

Q33.) With reference to the parvovirus B19, consider the following statements:

1. Parvovirus B19 is a small DNA virus.
2. It primarily affects children.
3. There is no specific antiviral treatment for Parvovirus B19.

Which of the statements given above is/are correct?

- a. 1 only

- b. 1 and 2 only
- c. 2 and 3 only
- d. **1,2 and 3**

Q34.)With reference to the India Australia Rapid Innovation and Start-up Expansion (RISE) Accelerator, consider the following statements:

1. RISE Accelerator is a bilateral program launched by the Atal Innovation Mission (AIM) and Australia's Commonwealth Scientific and Industrial Research Organisation (CSIRO).
2. RISE Accelerator targets to enable start-ups with mature tech-based innovations to fast-track their cross-border social, economic and environmental impact through cross-border innovation ecosystem.

Which of the statements given above is/are correct?

- a. 1 only
- b. 2 only
- c. **Both 1 and 2**
- d. Neither 1 nor 2

Q35.) Consider the following statements:

1. The Agricultural and Processed Food Products Export Development Authority (APEDA) is an organization under the Ministry of Commerce and Industry, Government of India.
2. APEDA is responsible for promoting the export of agricultural and processed food products from India.

Which of the statements given above is/are correct?

- a. 1 only
- b. 2 only
- c. **Both 1 and 2**
- d. Neither 1 nor 2

Q36.)With reference to the Vigyan Dhara Scheme, consider the following statements:

1. The Vigyan Dhara Scheme is a unified central sector scheme under the Ministry of Education.
2. It focuses on strengthening institutions and building a critical human resource pool in the field of science and technology.
3. It aligns with the vision of Viksit Bharat 2047, aiming for a developed India by 2047.

Which of the statements given above is/are correct?

- A. 1 and 2 only
- B. 2 and 3 only**
- C. 3 only
- D. 1,2 and 3

Q37.) Consider the following statements:

1. A polygraph test is a method used to measure and record physiological responses that occur when a person is asked specific questions.
2. The test measures physiological responses such as heart rate, blood pressure, respiration rate, and skin conductivity.

Which of the statements given above is/are correct?

- A. 1 only
- B. 2 only
- C. Both 1 & 2**
- D. Neither 1 nor 2

Q38.) Consider the following countries:

1. Argentina
2. Bolivia
3. Chile
4. Venezuela

How many of the above-mentioned countries are the part of lithium triangle?

- A. Only one
- B. Only two
- C. Only three**
- D. All four

Q39.) With reference to the Acute Encephalitis Syndrome (AES), consider the following statements:

1. It is a severe form of encephalitis caused primarily by mosquito-borne viruses, characterized by high fever and brain inflammation.
2. When inflammation is caused by an infection in the brain, it is known as infectious encephalitis.

Which of the statements given above is /are not correct?

- A. 1 only
- B. 2 only
- C. Both 1 and 2
- D. Neither 1 nor 2**

Q40.) With reference to the National Medical Register (NMR) Portal, consider the following statements?

1. National Medical Register Portal facilitates the registration of MBBS doctors eligible for practice in India.

2. It is mandated under the National Medical Commission (NMC) Act, 2019.
3. The Portal will reduce the chances of preoccupation of fraud professionals as this one introduces interconnection of information of state medical councils with one another.

How many of the statements given above are correct?

- A. Only one
- B. Only two
- C. All three**
- D. None

Q41.) With reference to the Acute Encephalitis Syndrome (AES), consider the following statements:

1. It is a severe form of encephalitis caused primarily by mosquito-borne viruses, characterized by high fever and brain inflammation.
2. When inflammation is caused by an infection in the brain, it is known as infectious encephalitis.

Which of the statements given above is /are not correct?

- A. 1 only
- B. 2 only
- C. Both 1 and 2
- D. Neither 1 nor 2**

Q42.) With reference to the Sexual Harassment electronic Box (SHe-Box), consider the following statements:

1. It provides a single window access to every woman, irrespective of her work status, whether working in organised or unorganised, private or public sector, to facilitate the registration of complaint related to sexual harassment.
2. It is launched by the Union Ministry of Women and Child Development.

Which of the statements given above is/are correct?

- A. 1 only
- B. 2 only
- C. Both 1 and 2**
- D. Neither 1 nor 2

Q43.) With reference to the bonus share issue, consider the following statements:

3. A bonus issue occurs when a company decides to offer free additional shares to the existing shareholders.

4. It serves as a reward to loyal shareholders without impacting the company's cash reserves.
 5. Bonus shares are not taxed at the time of issuance, though capital gains tax applies upon sale.
- Which of the statements given above is/are correct?

- E. 1 and 2 only
 F. 2 only
 G. 1 and 3 only
H. 1,2 and 3

Q44.) Consider the following statements Humayun's tomb

1. The tomb was commissioned by Humayun's wife Empress Bega Begum.
2. Humayun's Tomb is notable for being the first garden-tomb on the Indian subcontinent

Which of the statements given above are correct?

- a. 1 only
- b. 2 only
- c. Both 1 and 2
- d. Neither 1 nor 2

Q45.) With reference to the Act East Policy (AEP), consider the following statements:

1. The Act East Policy is a diplomatic initiative aimed at promoting economic, strategic, and cultural relations with the vast Asia-Pacific region.
2. It serves as a modern version of the Look East Policy.
3. By cultivating extensive economic and strategic ties with Southeast Asian nations, India aims to bolster its regional standing and act as a counterweight to China's influence in the region.

How many of the statements given above are not correct?

- a. Only one
- b. Only two
- c. All three
- d. None

Q46.) With reference to the Ideas4LiFE initiative, consider the following statements:

4. The Ideas4LiFE initiative to collect innovative ideas that encourage environmentally friendly behaviours.
5. Ideas4LiFE is part of a larger global movement called Mission LiFE, which promotes environmental sustainability.

Which of the statements given above are correct?

- e. 1 only
- f. 2 only
- g. Both 1 and 2**
- h. Neither 1 nor 2

Q47.) Consider the following statements about parliamentary privileges:

1. Parliamentary privileges are special rights, immunities, and exemptions enjoyed by the members of Parliament.
2. Speaker/Chairman has no role in admitting a privilege motion as it is directly dealt by privileges committee.

Which of the statements given above is/are not correct?

- a. 1 only
- b. 2 only**
- c. Both 1 and 2
- d. Neither 1 nor 2

Q48.) With reference to the National Apprenticeship Training Scheme (NATS), consider the following statements:

1. NATS aims to skill Indian youth in various trade disciplines through practical, hands-on On-the-Job Training (OJT).
2. It caters to graduate, diploma students, and vocational certificate holders.
3. During this period, apprentices receive a stipend, with 50% reimbursable to the employer by the Government of India.
4. Upon completion, apprentices receive a Certificate of Proficiency issued by the Government of India.

How many of the statements given above are correct?

- a. Only one
- b. Only two
- c. Only three
- d. All four

Q49.) With reference to the Gobi Desert, consider the following statements:

5. The Gobi Desert is a hot desert and grassland region in northern China and southern Mongolia.
6. The Gobi is a rain shadow desert formed by the Himalayas, which prevent rain-carrying clouds from reaching the region.

Which of the statements given above is/are correct?

- e. 1 only
- f. 2 only
- g. Both 1 and 2
- h. Neither 1 nor 2

- f. 2 only
- g. Both 1 and 2
- h. Neither 1 nor 2

Q50.) With reference to the Women Entrepreneurship Program (WEP), consider the following statements:

1. It aims to empower approximately 25 lakh women across India by providing them with essential skills, knowledge, and resources.
2. WEP is designed to address the unique challenges faced by women when starting and growing businesses.
3. WEP offers financial grants to women entrepreneurs.

Which of the statements given above is/are correct?

- a. 1 and 2 only
- b. 2 and 3 only
- c. 3 only
- d. 1, 2 and 3

Q51.) With reference to the Indo-Pacific Economic Framework (IPEF), consider the following statements:

1. The Indo-Pacific Economic Framework is a multilateral initiative aimed at enhancing economic cooperation and connectivity in the Indo-Pacific region.
2. It was launched by India during the G20 summit.

Which of the statements given above is/are correct?

- a. 1 only
- b. 2 only
- c. Both 1 and 2
- d. Neither 1 nor 2

Q52.) Consider the following statements about cloudbursts

3. All instances of very heavy rainfall are considered cloudbursts.
4. Cloudbursts frequently occur in mountainous regions

Which of the statements given above is/are not correct?

- e. 1 only

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