

CURRENT AFFAIRS

WEEKLY

WEEK: 5

MAY
2024

MAINS ARTICLE

GS-I

- ❑ Papua New Guinea Landslide
- ❑ Menstrual Hygiene in Indian Prisons

GS-II

- ❑ SC Upholds NFRA's Retrospective Powers
- ❑ Urban Infrastructure Challenges and the AMRUT Scheme
- ❑ IRDAI Introduces New Rules to Speed Up Health Insurance Claims

GS-III

- ❑ India to Begin Wheat Imports After Six-Year Gap
- ❑ The Emerging Space Travel Economy
- ❑ Landslides in Northeast India
- ❑ India's Patent System & Challenges
- ❑ Europe's AI Convention
- ❑ LVM3 Commercialisation
- ❑ Increasing Fire Incidents, a 'man-made' Disaster
- ❑ Human Trafficking in India
- ❑ Expansion of Deep-Vetting for Government Jobs in J&K

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- ❑ Cyclone Remal

INTERNATIONAL RELATIONS

- ❑ UN Award For Gender Advocacy

POLITY & GOVERNANCE

- ❑ Right to Vote in Imprisonment
- ❑ New Road Construction Guidelines
- ❑ Project Udbhav

ECONOMY

- ❑ RBI's PRAVAAH Portal
- ❑ India's Spice Trade
- ❑ WEF's Travel & Tourism Development Index 2024
- ❑ India's Trade Deficit with Top Partners

SCIENCE & TECHNOLOGY

- ❑ Rudram-II Anti-Radiation Missile
- ❑ New Light-Based Tool Detects Viral Infections
- ❑ India's first Quantum Diamond Microchip Imager
- ❑ Golden Rice
- ❑ Microcephaly and the Role of the SASS6 Gene
- ❑ Astronomical Transients
- ❑ WIPO Treaty

ENVIRONMENT

- ❑ Wet Bulb Temperature
- ❑ Venezuela Becomes First Country to Lose All Glaciers
- ❑ Brain-Eating Amoeba (*Naegleria fowleri*)

GS SCORE

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DISCLAIMER

*T*he current affairs articles are segregated from prelims and mains perspective, such separation is maintained in terms of structure of articles. Mains articles have more focus on analysis and prelims articles have more focus on facts.

However, this doesn't mean that Mains articles don't cover facts and PT articles can't have analysis. You are suggested to read all of them for all stages of examination.

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SECTION

A

MAINS ARTICLES

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1. PAPUA NEW GUINEA LANDSLIDE

CONTEXT: A devastating landslide in Papua New Guinea's Enga province has potentially buried over 2,000 people. This catastrophic event at Mount Mungalo highlights the destructive power of landslides and the challenges in predicting them.

Causes of Landslides

- Landslides occur when **gravity's pull exceeds the strength of the materials making up a slope**. These materials can include **rocks, sand, silt, and clay**. When a slope fails, the resulting landslide can vary greatly in size, from a few cubic meters to millions.



- Natural Triggers:**
 - Earthquakes:** Ground shaking from earthquakes can stress and weaken slopes.
 - Rainfall:** Heavy rain can saturate the ground, adding weight to the slope and causing it to fail. Papua New Guinea is especially prone to landslides due to its active fault lines and heavy rainfall.
- Water's Role in Landslides:**
 - Erosion:** Constant wave action can erode coastal slopes.
 - Groundwater:** Water can dissolve rocks within slopes, reducing their stability.
- Human Triggers:**
 - Deforestation:** Removing trees weakens slopes, as tree roots help stabilize the ground and drain water.
 - Mining Activities:** Blasts from mining can create vibrations similar to small earthquakes, destabilizing nearby slopes.

Challenges in Predicting Landslides

- Multiple Factors:** Effective prediction requires knowledge of potential triggers like earthquakes and rainfall, as well as the properties of the slope materials.
- Complex Geomaterials:** Slopes often contain varied layers of rock and soil with different strengths. Mapping these materials in three dimensions is currently impossible with existing technology.
- Partial Information:** Geologists and engineers work with limited data from a few locations and must extrapolate this to predict slope stability, often missing critical weak points.
- Runout Distance:** The larger the landslide, the farther it travels. However, predicting the exact size and impact area remains uncertain.
- Timing:** Predicting the precise timing of landslides is as challenging as forecasting the weather or seismic activity.

Fact Box: Landslide Prone Regions in India

- In India, more than 12% of the territory is landslide prone. It is the third most fatal disaster globally.

Landslide Prone Areas	States & Cities
Western Himalaya	Himachal Pradesh, Jammu & Kashmir, Uttar Pradesh, Uttarakhand
Eastern & North-Eastern Himalaya	West Bengal, Arunachal Pradesh, Sikkim
Naga-Arakan Mountain belts	Tripura, Nagaland, Mizoram, Manipur
Western Ghat region & Nilgiri	Kerala, Karnataka, Tamil Nadu, Maharashtra, Goa
Meghalaya Plateau comprising Peninsular India	North-eastern India

Government initiatives to mitigate the risk of landslides

- National Landslide Risk Management Strategy
- Landslide Risk Mitigation Scheme (LRMS)
- Flood Risk Mitigation Scheme (FRMS)
- National Guidelines on Landslide and Snow Avalanches (prepared by NDMA)
- Landslide Atlas of India

PYQ

Q. Describe the various causes and the effects of landslides. Mention the important components of the National Landslip Risk Management Strategy. (2021)

Q. Disaster preparedness is the first step in any disaster management process. Explain how hazard zonation mapping will help disaster mitigation in the case of landslides. (2019)

2. MENSTRUAL HYGIENE IN INDIAN PRISONS

CONTEXT: In 2023, India made significant progress by drafting the 'National Menstrual Hygiene Policy,' recognizing menstruation as a natural process that requires serious attention. The policy identifies prisoners as a key group with limited access to menstrual hygiene facilities, marking a positive step. However, it lacks a concrete action plan to improve menstrual hygiene management in prisons and fails to involve the Ministry of Home Affairs, a crucial stakeholder in prison management.

Need to ensure menstrual hygiene in prisons

Ensuring menstrual hygiene in prisons is not just a matter of public health; it is also a societal issue reflecting on the broader aspects of **equity, dignity, and human rights**.

- **Gender Equality and Human Rights:** Access to menstrual hygiene is a fundamental human right. Denying this access in prisons **perpetuates gender inequality** and violates the **dignity of incarcerated women**.
- **Health and Well-being:** Poor menstrual hygiene can lead to various health issues, including infections and mental health problems. By ensuring proper menstrual hygiene in prisons, the government can significantly improve the overall health and well-being of incarcerated women.
- **Reducing Stigma:** Addressing menstrual hygiene openly helps in reducing the stigma associated with menstruation. It promotes a more inclusive and understanding society where natural biological processes are recognized and respected.
- **Fighting Period Poverty:** Menstrual hygiene management in prisons is a critical aspect of the broader fight against period poverty.

Issues/Challenges

- The **availability of sanitary napkins** has been inconsistent across different prisons in the country.
- The **quality of sanitary napkins** has also been unsatisfactory.
- **Many States have not implemented provisions** (supplying adequate water and washroom facilities for female prisoners).
- **Overcrowding and poor socio-economic conditions** further exacerbate the struggle of incarcerated women to secure basic necessities (water, sanitary napkins, detergent, and soap).

Fact Box: Women in Prisons

- According to the National Crime Records Bureau, there are 23,772 women in Indian prisons.
- Of them, 77% are in the reproductive age group (18-50 years) and are likely to be regular menstruators.

3. SC UPHOLDS NFRA'S RETROSPECTIVE POWERS

CONTEXT: The Supreme Court has dismissed appeals against a tribunal order, reinforcing the National Financial Reporting Authority's (NFRA) jurisdiction, even for audits predating its creation in 2018. This development has significant implications for the oversight of corporate and financial sectors in India.

What is the issue?

- The National Financial Reporting Authority (NFRA) was established on October 1, 2018, according to a **Ministry of Corporate Affairs (MCA)** notification.
- The rules governing NFRA were notified on **November 13, 2018**. However, the audits (in question) examined by NFRA were conducted for the financial year 2017-18, and the audit reports were issued before NFRA's establishment.
- This led to the argument that NFRA lacked jurisdiction to retrospectively review these audits.

Key Points:

- **Legal Doctrine:** The "**doctrine of merger**" establishes that when a higher court issues a decision on a case, the lower court's ruling becomes absorbed into it. This principle maintains legal hierarchy and prevents conflicting judgments.
- **NFRA's Jurisdiction:** The NFRA's retrospective jurisdiction was affirmed by the **National Company Law Appellate Tribunal (NCLAT)** in December 2023. The tribunal upheld the NFRA's authority over alleged audit lapses, even for audits conducted before its establishment.
- The Supreme Court's refusal to intervene in the NCLAT's decision solidifies **NFRA's authority, including its retrospective jurisdiction**.

Implications:

- The clarity on NFRA's retrospective powers ensures continuity in oversight of statutory audits, avoiding regulatory gaps.
- The Supreme Court's endorsement of the NCLAT's decision establishes NFRA's authority in setting financial reporting standards and norms.

Fact Box: National Financial Reporting Authority (NFRA)

- The National Financial Reporting Authority (NFRA) was established under **Section 132 of the Companies Act, 2013**, effective from October 1, 2018.
- **It serves two main purposes:**
 - ▶ To create an independent regulatory body responsible for accounting and auditing regulations.

- ▶ To enhance trust among investors and the public in a company's financial reporting.
- **Government Objective:**
 - ▶ The government's objective in creating NFRA is to:
 - ▶ Ensure a separate and impartial regulatory body for overseeing accounting and auditing laws.
 - ▶ Restore confidence in financial reporting following recent corporate scandals.

What is Retrospective Jurisdiction?

- Retrospective jurisdiction refers to the authority of a **regulatory body or legal entity** to investigate and take action on events or matters that occurred before its establishment or before certain laws or regulations were enacted.

4. URBAN INFRASTRUCTURE CHALLENGES AND THE AMRUT SCHEME

CONTEXT: The increasing urbanization in India has put a spotlight on the country's infrastructure needs. In light of this emerging issue, the AMRUT (Atal Mission for Rejuvenation and Urban Transformation) scheme, along with its more ambitious version, AMRUT 2.0, has been a topic of significant discussion and analysis.

Urbanization in India

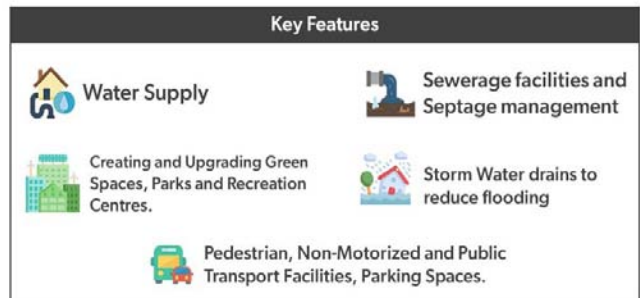
- Currently, 36% of India's population lives in cities, a figure expected to exceed 50% by 2047.
- The **World Bank estimates** that USD 840 billion is needed over the next 15 years to fund essential urban infrastructure.

Introduction to the AMRUT Scheme

- The Atal Mission for Rejuvenation and Urban Transformation (AMRUT) was launched by the Indian government in June 2015, with a second version (AMRUT 2.0) introduced on October 1, 2021.
- **Goals of AMRUT**
 - ▶ **Water Supply and Sewerage:** Ensure every household has a tap with a reliable water supply and a sewerage connection.
 - ▶ **Urban Greenery:** Develop parks and open spaces.
 - ▶ **Pollution Reduction:** Promote public transport and non-motorized transport facilities.
- **AMRUT 2.0:** AMRUT 2.0 aims to make cities 'water secure' and provide functional water tap connections to all households. It targets 100% sewage management in 500 cities, with a total outlay of Rs 2,99,000 crore over five years, including ₹76,760 crore from the Central government.

- **Progress so far (Utilization of Funds):** As of May 19, 2024, USD 83,357 crore has been spent under the AMRUT scheme. **Achievements include:**
 - ▶ 58,66,237 tap connections.
 - ▶ 37,49,467 sewerage connections.
 - ▶ Development of 2,411 parks.
 - ▶ Installation of 62,78,571 LED lights.

Atal Mission For Rejuvenation and Urban Transformation



Challenges of Urban Infrastructure

Despite efforts, significant challenges remain:

- Inadequate water, sanitation, and hygiene cause about 200,000 deaths annually.
- India's disease burden from unsafe water and sanitation is 40 times higher than China's.
- Many reservoirs are only 40% full, and 21 major cities are at risk of running out of groundwater.
- A NITI Aayog report predicts 40% of India's population will lack drinking water by 2030.
- 31% of urban households lack piped water, and 67.3% are not connected to sewerage systems.
- The average urban water supply is 69.25 liters per person per day, far below the required 135 liters.
- Air quality in AMRUT cities continues to deteriorate. The **National Clean Air Programme** was launched in 2019 to address this, as **AMRUT 2.0** focuses primarily on water and sewerage.

Issues with AMRUT

- **Project-Oriented Approach:** The scheme lacked a holistic view, focusing narrowly on projects.
- **Lack of City Participation:** Cities were not actively involved in the scheme's design or implementation.
- **Bureaucratic and Private Dominance:** Managed by bureaucrats and private companies, with minimal input from elected city officials.
- **Ineffective Water Management:** Failed to consider local climate and infrastructure, resulting in inefficient sewage treatment systems.
- **Real Estate Focus:** Urban planning was overshadowed by real estate development, leading to the disappearance of water bodies and poor storm water management.

Fact Box: Other Government Schemes for Developing City Infrastructure in India

- **Smart Cities Mission:** Launched in June 2015, the mission aims to promote sustainable and inclusive cities that provide core infrastructure, clean and sustainable environments, and a decent quality of life to their citizens.
- **Pradhan Mantri Awas Yojana:** Launched in June 2015, this scheme aims to provide affordable housing for all poor.
- **HRIDAY (Heritage City Development and Augmentation Yojana):** Launched in January 2015, HRIDAY aims to preserve and revitalize the heritage character of cities.
- **Swachh Bharat Mission (Urban):** Launched in October 2014, this mission aims to eliminate open defecation and improve solid waste management.
- **Jal Jeevan Mission (Urban):** Launched in February 2021, this mission aims to ensure universal coverage of water supply and coverage of sewerage and septage.

5. IRDAI INTRODUCES NEW RULES TO SPEED UP HEALTH INSURANCE CLAIMS

CONTEXT: Delays in settling health insurance claims by insurance companies or third-party administrators (TPAs) have often caused significant stress for patients and their families. To address these issues, the Insurance Regulatory and Development Authority of India (IRDAI) has introduced new rules to streamline the health insurance claim process.

The Need for New Rules

- Policyholders have frequently faced long waiting times for their health insurance claims to be processed, even when pre-approval was already given before hospital admission.
- This delay not only causes inconvenience but also imposes extra financial burdens on patients who have to pay for additional nights in the hospital due to claim processing delays.
- These issues highlight the need for a more efficient and timely claim settlement process.

About the New Rules

- **Time Limit for Approving Cashless Claims:** IRDAI has mandated that insurers must grant final authorisation within three hours of receiving the discharge request from the hospital. If there is any delay beyond three hours, the additional amount charged by the hospital will be borne by the insurer from the shareholder's fund.

- **Immediate Processing in Case of Death:** In the event of a policyholder's death during treatment, the insurer is required to:
 - ▶ Immediately process the claim settlement request.
 - ▶ Ensure the immediate release of the mortal remains (dead body) from the hospital.
- **Striving for 100% Cashless Claims:** IRDAI has directed insurers to achieve 100% cashless claim settlement in a timely manner.
- **Digital Pre-Authorisation Process:** Insurers must provide a pre-authorisation process through digital means.

Fact Box: About IRDAI

- **Jurisdiction:** Ministry of Finance
- The Insurance Regulatory and Development Authority of India (IRDAI) is an **autonomous and statutory body** which is responsible for managing and regulating insurance and re-insurance industry in India.
- It was constituted under an **Act of Parliament in 1999.**

6. INDIA TO BEGIN WHEAT IMPORTS AFTER SIX-YEAR GAP

CONTEXT: India is poised to begin wheat imports after a six-year gap, to replenish depleted reserves and hold down prices that leaped following three years of disappointing crops.

Key Highlights

- **Import Tax:** New Delhi is expected to lift a 40% tax on wheat imports, allowing private traders and flour millers to purchase from producers like Russia.
- **Timing:** The government is likely to wait until after June, once the new wheat harvest is in, before removing the import tax.

Need for Imports

- **Declining Harvests:** After five consecutive record harvests, high temperatures severely reduced India's wheat crop in 2022 and 2023.
- **Current Crop Forecast:** This year's crop is expected to be 6.25% lower than the government estimate of 112 million metric tons.
- **Rising Prices:** Domestic wheat prices have remained above the state-set minimum purchase rate of 2,275 rupees per 100 kg and have recently started increasing.
- **Depleted Stocks:** Wheat stocks in state warehouses dropped to 7.5 million metric tons in April, the lowest in 16 years, after the government sold over 10 million tons to control prices.

Procurement Process

- **Purpose:** The government procures food grains (rice, wheat, and coarse grains) to ensure farmers receive the **minimum support price (MSP)** and to maintain stocks for distribution to the poor under the **public distribution system (PDS)** and other schemes.
- **Agencies Involved:** The Food Corporation of India (FCI) and state government agencies (SGAs) handle wheat procurement.
- **Procurement Systems:**
 - **Centralised Procurement:** FCI or SGAs directly

procure food grains for the Central Pool, which are used for welfare schemes and calamity relief.

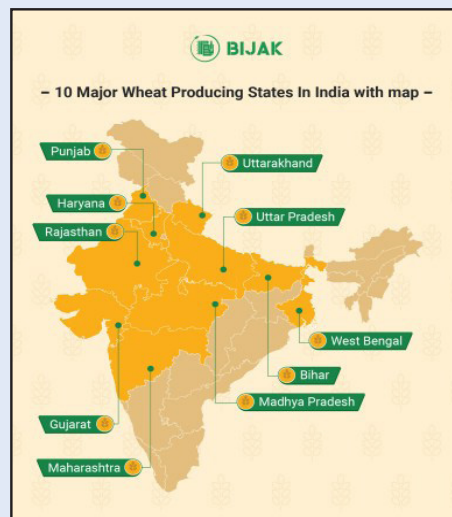
- **Decentralised Procurement:** Managed by the respective states.
- **MSP Declaration:** The government announces the MSP before sowing based on the **Commission for Agricultural Cost and Prices (CACP)** recommendations. MSPs apply to 23 farm commodities, including wheat and rice, but there is **no statutory backing** mandating their implementation.

Fact Box:

- India is the world's second largest wheat grower after China. Wheat is the main cereal crop in India.
- **Type:** Rabi Crop
- **Total area under the crop:** about 29.8 million hectares
- Major Wheat Growing States: Uttar Pradesh, Punjab, Haryana, Madhya Pradesh, Rajasthan, Bihar and Gujarat.

Climatic Requirements for Wheat Cultivation

- **Adaptability:** Suitable for tropical, sub-tropical, temperate, and cold regions, including areas beyond 60° north latitude.
- **Cold Tolerance:** Can withstand severe cold and snow, resuming growth with warmer spring weather.
- **Optimal Conditions:** Prefers cool, moist weather during the growing period followed by dry, warm weather for proper grain ripening.
- **Temperature:** Ideal germination occurs at 20-25°C, but seeds can germinate within a range of 3.5 to 35°C.
- **Rainfall:** Rains just after sowing can hinder germination and promote seedling blight. Warm and damp climates are not suitable for wheat.
- **Soil Requirements for Wheat Cultivation**
 - **Ideal Soil:** Clay loam or loam texture with good structure and moderate water holding capacity.
 - **Soil Reaction:** Neutral soil pH is ideal.
 - **Water Logging:** Wheat is sensitive to water logging; therefore, soils with poor structure and drainage are unsuitable.



PYQ

Mains

- Q. What do you mean by the Minimum Support Price (MSP)? How will MSP rescue the farmers from the low-income trap? (2018)
- Q. What are the major reasons for declining rice and wheat yield in the cropping system? How crop diversification is helpful to stabilize the yield of the crop in the system? (2017)

Prelims

- Q. What is/are the advantages/advantages of zero tillage in agriculture? (2020)
1. Sowing of wheat is possible without burning the residue of the previous crop.
 2. Without the need for a nursery of rice saplings, direct planting of paddy seeds in the wet soil is possible.
 3. Carbon sequestration in the soil is possible.

Select the correct answer using the code given below:

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

Solution: (d)

Q. Consider the following crops: (2013)

1. Cotton
2. Groundnut
3. Rice
4. Wheat

Which of these are Kharif crops?

- (a) 1, 2 and 3
- (b) 2, 3 and 4
- (c) 1, 2 and 4
- (d) 1 and 3

Solution: (a)

7. THE EMERGING SPACE TRAVEL ECONOMY

CONTEXT: Gopi Thotakura, an entrepreneur and pilot, became the first Indian space tourist on Blue Origin's NS-25 mission, led by Jeff Bezos. He's the first Indian citizen to experience space tourism, but officially the second Indian astronaut after Wing Commander Rakesh Sharma in 1984.

What is Space Travel?

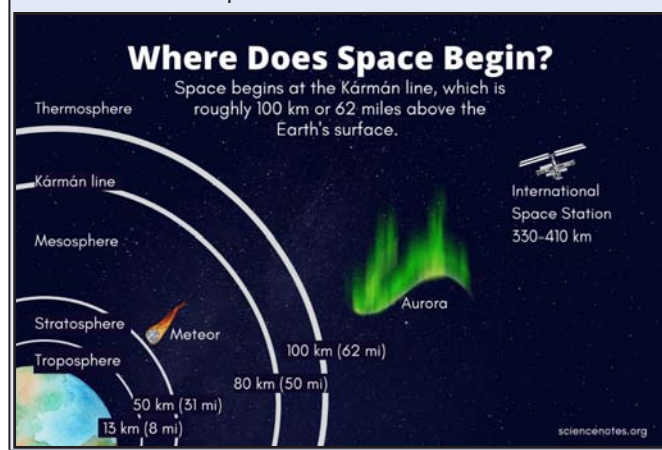
- Space travel starts around **100 km above Earth's surface**, crossing the **Karman line**, which marks the boundary between Earth's atmosphere and outer space.
- Anything flying below this line is considered an **aircraft**, while anything crossing it is a **spacecraft**.

Private Space Tourism:

- Private space tourism became active in 2021 with companies like Virgin Galactic, Blue Origin, and SpaceX offering missions.
- These missions opened space tourism to **anyone willing to pay**.
- Different missions require different levels of training. Sub-orbital flights, like Thotakura's, require minimal training usually included in the ticket price.
- Accessibility:** Space tourism is currently only affordable for the super-rich.
- Some more affordable options, like high-altitude balloon rides, are emerging. These take passengers up to 100,000 feet for about \$50,000. While they don't offer weightlessness, passengers can see the curvature of the Earth.

Fact Box: Kármán line

- The Kármán line is a boundary **62 miles (100 kilometers)** above **mean sea level** that borders **Earth's atmosphere** and the beginning of space.
- While the Kármán line itself has **no distinct physical characteristics**, its significance lies in its practical applications for space-related activities and aeronautical operations.



8. LANDSLIDES IN NORTHEAST INDIA

CONTEXT: Heavy rains caused by Cyclone Remal have led to landslides in several northeastern states. This highlights the urgent need for India to build resilience against multi-hazard disasters, where one event can trigger another, causing multiple disasters simultaneously. In recent years, India has experienced heavy rainfall that has breached glacial lakes, causing flash floods and subsequent landslides and flooding.

Landslide Vulnerability in India

- According to the **Geological Survey of India (GSI)**, about 0.42 million square kilometers of India's land, or 13% of its area, is prone to landslides.
- This vulnerability spans 15 states and four Union Territories, covering almost all hilly regions.
- The Northeastern region, with its predominantly hilly terrain, is especially at risk, comprising 0.18 million square kilometers, or 42% of the total vulnerable area.
- This region is also susceptible to earthquakes, a major trigger for landslides.
- Causes of Landslides**
 - Rainfall and earthquake:** Most landslides in hilly areas are caused by heavy rainfall, though earthquakes can also trigger them.
 - Carrying capacity:** The risk has been worsened by inadequate consideration of the terrain's capacity to bear loads.
 - Ineffective regulation:** Many hilly regions lack proper building regulations, and when regulations do exist, they are often not effectively enforced.
 - Development activities:** New construction, infrastructure development, and even agricultural practices can increase landslide risk.

Government Intervention

- Organizations:** The **National Disaster Management Authority (NDMA)**, in collaboration with the GSI and other agencies, has been working to mitigate and manage landslide risks.
- National Landslide Risk Management Strategy:** In 2019, a National Landslide Risk Management Strategy was finalized. This strategy includes vulnerability mapping, identifying the most vulnerable locations, developing an early warning system, and preparing mountain zone regulations. However, much of this work is still pending implementation.

PYQ

Q. Define the concept of carrying capacity of an ecosystem as relevant to an environment. Explain how understanding this concept is vital while planning for the sustainable development of a region. (2019)

9. INDIA'S PATENT SYSTEM & CHALLENGES

CONTEXT: India's patent system has faced criticism for arbitrary refusals, procedural inconsistencies, and allegations of corruption. Recent legal challenges and complaints highlight the need for reform in the administration of intellectual property (IP) rights.

Key Findings:

- Instances of arbitrary rejection of patent applications have raised concerns about the functioning of India's patent office.
- Allegations of corruption, including a case involving a Deputy Controller demanding a bribe, have further tarnished the office's reputation.
- Despite government efforts to address shortcomings, such as manpower shortages and procedural inefficiencies, challenges persist, leading to a **high rate of withdrawn patent applications**.
- The **Delhi High Court's intervention** in cases and the filing of complaints with oversight bodies like the **Central Vigilance Commission (CVC)** underscore the seriousness of the issues.

Challenges in the system

- Shortage of manpower** in the patent office has contributed to delays and inconsistencies in processing patent applications.
- Allegations of corruption** and mismanagement have eroded trust in the patent granting process.
- Engagement of contractual manpower** and delegation of duties to external agencies have raised questions about the legality and effectiveness of administrative practices.

Implications:

- Delayed or arbitrary patent approvals **hinder innovation and economic growth** by discouraging investment in research and development.
- Allegations of corruption **damage India's reputation as a destination for intellectual property protection and foreign investment**.
- Reform efforts, including increased transparency, stricter oversight, and streamlined processes, are necessary to restore confidence in the patent system and promote innovation.

Fact Box: India's Patent System

- A patent grants exclusive rights to its holder for an invention. In India, patents last for 20 years from the date of application.
- To qualify for a patent under the Indian Patent Act of 1970, the innovation must meet these criteria:
 - Novelty:** It must be new.
 - Non-obviousness:** It should not be obvious to someone skilled in the field.
 - Industrial Applicability:** It should be usable in industries.
- Patentable Processes: Only manufacturing techniques or processes can be patented.
- Exclusions:** It shouldn't be subject to sections 3 and 4 of the Patents Act of 1970's provisions.
- International Compliance:** India aligns its patent laws with international standards.
 - It joined the **World Trade Organization** in 1995, leading to compliance with the **TRIPS Agreement**.
 - Amendments in 2005 introduced pharmaceutical product patents in line with TRIPS.
 - India is also part of various intellectual property conventions, including the-
 - Berne Convention for copyright
 - Budapest Treaty
 - Paris Convention for Industrial Property protection
 - Patent Cooperation Treaty for patent matters

PYQ

Q. In a globalised world, intellectual property rights assume significance and are a source of litigation. Broadly distinguish between the terms – copyrights, patents and trade secrets. (2014)

Q. Bringing out the circumstances in 2005 which forced an amendment to the section 3(d) in Indian Patent Law, 1970, discuss how it has been utilized by the Supreme Court in its judgement in rejecting Novartis' patent application for 'Glivec'. Discuss briefly the pros and cons of the decision. (2013)

10. EUROPE'S AI CONVENTION

CONTEXT: Europe, through the Council of Europe (COE), has taken a significant step in AI governance by adopting the Framework Convention on Artificial Intelligence and Human Rights, Democracy, and the Rule of Law, known as the 'AI convention.' This convention addresses the complexities of governing AI and its implications on human rights and democracy.

Understanding the Convention

- **Scope of the Convention:** The convention aims to ensure that AI activities align with human rights, democracy, and the rule of law. It covers AI systems' lifecycle activities conducted by public authorities or private actors acting on their behalf. Private sector activities are also addressed to a certain extent, balancing flexibility with obligations.
- **Addressing National Security Concerns** The convention addresses national security concerns through exemptions in **articles 3.2, 3.3, and 3.4**, which include protection of national security interests, research, development, testing, and national defense. While these exemptions are broad, they don't entirely exclude the convention's applicability in such areas.
- **General Obligations and Protection** The convention emphasizes the protection of human rights, democratic processes, and the rule of law. It expects parties to take measures against issues like disinformation and deep fakes, ensuring effective remedies and procedural safeguards.

Need for the AI Convention

- The convention does not introduce new human rights specific to AI but emphasizes the protection of existing rights.
- It seeks to strike a balance between AI innovation and safeguarding human rights, addressing the pressing need for comprehensive AI governance.

Fact Box: About Framework Convention

- A framework convention is a legally binding treaty that outlines broad commitments and objectives, leaving room for subsequent agreements, called protocols, to specify targets.
- For example, the **Convention on Biological Diversity** is a framework convention, while the **Cartagena Protocol on Biosafety** is a **protocol under it**.
- Similarly, the AI convention sets the stage for potential protocols, such as a 'Protocol on AI Risk.'

11. LVM3 COMMERCIALISATION

CONTEXT: In a significant move, ISRO's commercial arm, New Space India Limited (NSIL), has invited private firms to build India's heaviest rocket, LVM3. This step aims to boost private sector participation in India's space program, aligning with the growing demand for satellite launches worldwide.

ISRO's Collaboration Plan:

- The selected private entity will collaborate with ISRO for **14 years**.
- The initial two years focus on technology transfer, followed by 12 years for manufacturing 4 to 6 LVM3 rockets annually.

- Beyond LVM3, private players are also invited to manufacture the **Small Satellite Launch Vehicle (SSLV)** and **PSLV, ISRO's mainstay**.

Benefits and Opportunities:

- Commercialization has the potential to expand India's presence in the global space market.
- It will enable ISRO to concentrate on developing the **Next Generation Launch Vehicle (NGLV)** for ambitious projects like setting up a space station and lunar missions.
- The timings of this decision are strategic, as other major players face constraints or are in testing phases, creating an opportunity for India to secure a place in the market.
- India's move to involve private firms in rocket manufacturing reflects a strategic approach to harness the potential of the space economy.

Fact Box: The LVM3 Rocket:

- Formerly known as **GSLV-MkIII**, the LVM3 is ISRO's most powerful rocket.
- It is a **three stage vehicle** with **two solid strap-on motors (S200)**, one liquid core stage (L110) and a high thrust **cryogenic upper stage (C25)**.
- It can carry heavy payloads, up to 4 tonnes to geostationary orbit and 8 tonnes to lower earth orbits.
- The LVM3 has a track record of seven successful launches and the rocket had made its debut in the global commercial launch service market by placing **72 satellites of OneWeb on-board two missions** from its spaceport at Sriharikota.

12. INCREASING FIRE INCIDENTS, A 'MAN-MADE' DISASTER

CONTEXT: Fire safety is a critical issue in India, highlighted by recent tragic incidents such as the Delhi hospital and Rajkot gaming zone fires. These unfortunate incidents, which reveal patterns of negligence and regulatory failures, highlight the importance of stringent enforcement of safety laws and the need for proactive measures to protect human lives and property.

Reasons Behind the Tragic Incidents

- **Regulatory Failures:** Both the Delhi hospital and the Rajkot gaming zone operated **without mandatory licences and safety measures**, reflecting a systemic failure in regulatory enforcement. These institutions bypassed essential safety norms, endangering lives.
- **Administrative Negligence:** There was a lack of oversight from the relevant authorities. In both cases,

the institutions had not been inspected or held accountable for their non-compliance with safety standards, indicating a **severe lapse in administrative diligence**.

- **Greed and Mismanagement:** Business owners prioritizing profits over safety led to inadequate safety measures. The lack of firefighting equipment and trained personnel in both establishments exemplifies a blatant disregard for human life.
- **Inadequate Infrastructure:** Shortage of manpower and modern equipment in fire service departments hampers effective disaster response, contributing to higher casualties and damage during incidents.

India's Model Code for Fire Safety

- **National Building Code (NBC):** NBC is India's central standard for fire safety, published by the **Bureau of Indian Standards (BIS)** in 1970 and last updated in 2016. It provides detailed guidelines on construction, maintenance, and fire safety for buildings. Part 4 of the NBC specifically addresses fire safety, outlining measures to ensure the safety of occupants.
- **Mandatory Compliance:** State governments must incorporate the NBC's fire safety recommendations into their local building bylaws.

Key Fire Safety Provisions

- **Building Classification and Restrictions:** The NBC categorizes buildings into fire zones to prevent hazardous structures from coexisting with residential and institutional buildings.
 - Hotels are under Residential '**Group A**'
 - Hospitals are under Institutional '**Group C**'
 - Assembly buildings (marriage halls, night clubs, tents, multiplexes) are under '**Group D**'.
- **Construction Materials:** Non-combustible materials should be used in construction, especially for staircases and enclosures.
- **Electrical Safety:** Wiring should have flame-retardant properties, and separate shafts for different voltage levels are required. Emergency power systems should support critical safety features like exit signage and fire alarms.
- **Exit Access and Lighting:** Properly identified exits with adequate lighting are essential for safe evacuation.
- **Advanced Safety Technologies:** The use of automatic fire detection systems, sprinklers, fire barriers, and escape routes is recommended.

Where is the State?

- According to the **XII Schedule** of the Constitution under **Article 243(W)**, the fire services in India are under the purview of the **state** and are listed as a **municipal function**.
- The '**Model Building Bye Laws 2016**', issued by the **Ministry of Housing and Urban Affairs**, guide states and Union Territories in framing their building bylaws. These laws include norms for fire protection and safety.

- Additionally, the **National Disaster Management Authority (NDMA)** provides guidelines for fire safety in homes, schools, and hospitals.

Challenges in Implementation

- Despite the existence of fire safety rules in all states, compliance is often lax due to the NBC being a "recommendatory document." This means its provisions are frequently ignored at the local level, even when certifications are mandatory.
- Local authorities often fail to conduct regular fire safety audits, leading to tragic outcomes.

Fact Box:

- According to NCRB's latest **Accidental Deaths and Suicides in India (ADSI) report**, as many as 7,435 people were killed in over 7,500 fire accidents in 2022.
- No lessons learnt from the **1997 Uphaar Cinema** tragedy or the **Kumbakonam fire** that killed 90 schoolchildren in 2004.
- The Centre earmarked ₹5,000cr from 2021-22 to 2025-26, under **National Disaster Response Fund** to "strengthen fire services at state level".

13. HUMAN TRAFFICKING IN INDIA

CONTEXT: The National Investigation Agency (NIA) has arrested five individuals in connection with their alleged involvement in international human trafficking and cyber fraud activities. They were allegedly coerced into engaging in various illegal online activities, including credit card fraud, investments in cryptocurrency using fake applications, honey trapping, etc.,

What is Human Trafficking?

- According to the United Nations Office on Drugs and Crime (UNODC), human trafficking involves the recruitment, transportation, transfer, harboring, or receipt of people through force, fraud, or deception to exploit them for profit.
- This exploitation includes sexual exploitation, forced labor, slavery, servitude, or the removal of organs.
- **Global Severity:** The UNODC's 2019 report reveals that 60% of trafficking occurs within a country. Key statistics include:
 - 90% of sexual trafficking victims are women and girls.
 - In South Asia, 85% of victims are exploited for forced labor.
 - Human trafficking is the third most challenging crime globally, following drugs and weapons in terms of turnover and human misery.

Causes of Human Trafficking

- **Poverty:** Trafficking thrives in areas with widespread poverty. Desperate parents might sell their children, believing it will lead to a better life for them.
- **Social Factors:** Young women are particularly vulnerable due to social and cultural devaluation, making them easy targets for traffickers.
- **Migration:** Individuals seeking better lives are often lured by traffickers with false promises. Once under the traffickers' control, coercive measures are used to exploit them.
- **Climate change,** including sudden-onset disasters such as floods and slow-onset events like drought, increased large-scale displacement and migration, further exacerbating vulnerabilities to human trafficking.
- **Other Factors:** Permeable borders, corrupt officials, involvement of international criminal groups, limited capacity or commitment of immigration and law enforcement officers.

Reason behind India's vulnerability to human trafficking

- **Border:** In India, West Bengal has long served as a major hub for both domestic and International human trafficking, largely due to the state's areas of poverty and its porous 2,216.7-kilometre border with Bangladesh. It also shares borders with Nepal and Bhutan.
- **Geographical proximity with opium growing regions:** India is placed between the two largest opium growing areas in the world.
 - To the west is the Golden Crescent (Afghanistan)
 - To the east is the Golden Triangle (Myanmar)

Fact Box: Legal and Constitutional Frameworks to Counter Human Trafficking in India

- **Article 23:** Prohibits human trafficking and forced labor (begar).
- **Article 24:** Forbids the employment of children below 14 years in hazardous jobs like factories and mines.
- **Immoral Traffic Prevention Act, 1986:** This Act aims to implement the Trafficking Convention and prohibit immoral human trafficking. It establishes authorities at the central and state levels to combat trafficking, though it does not specify their roles, functions, or composition.
- **Criminal Law (Amendment) Act, 2013:** This amendment replaces Section 370 of the Indian Penal Code with **Sections 370 and 370A**, providing comprehensive measures to counter human trafficking.

- **Section 370 of the IPC** criminalises the **import, export, removal, buying, selling or disposal of any person as a slave or accepting, receiving or detaining against the person's will as a slave.** The **Bharatiya Nyaya Sanhita (BNS)**, to replace IPC, has introduced beggary as a form of exploration for trafficking.

However, conviction rate in human trafficking cases stood at 19.4 per cent in 2022.

PYQ

- Q. India's proximity to two of the world's biggest illicit opium-growing states has enhanced her internal security concerns. Explain the linkages between drug trafficking and other illicit activities such as gunrunning, money laundering and human trafficking. What countermeasures should be taken to prevent the same? (2018)**

14. EXPANSION OF DEEP-VETTING FOR GOVERNMENT JOBS IN J&K

CONTEXT: The Union government has announced an expansion of the "deep-vetting" process for government job aspirants in Jammu and Kashmir. This new policy aims to ensure that no relatives of militants or stone-pelters get government jobs in the Union Territory. This move is expected to affect over 50,000 families and has been criticized by regional parties for potentially alienating Kashmiri youth.

The Need for New Rules

- The policy change comes in response to concerns about the **security implications of hiring individuals with potential ties to militancy.**
- The traditional process only verified the credentials of the job aspirant.
- However, the expanded vetting will include background checks on immediate and close relatives on both the maternal and paternal sides to identify any connections to militant activities or stone-pelting incidents.

Details of the New Rules

- **Expanded Background Checks:** Security agencies will perform thorough checks on the families of job aspirants, including immediate and close relatives.
- **Target Group:** The focus is on ensuring no relatives of militants or stone-pelters are employed in government positions.
- **Past Rehabilitation Policies:** This policy overturns previous government efforts to rehabilitate former militants, which included:

- ▶ **Monetary Incentives:** Cash deposits and monthly stipends were provided to surrendered militants under policies from 1995, 2004, and 2010.
- ▶ **Rehabilitation for Exfiltrated Individuals:** A policy for Kashmiris who had exfiltrated to Pakistan Occupied Kashmir for arms training allowed them to return and reintegrate.

Impact of the move

- The Government has a policy of zero tolerance against terrorism. The expanded vetting policy for government jobs in Jammu and Kashmir is a significant shift aimed at enhancing security.
- However, it has sparked a debate about its potential consequences on the region's youth and their integration into mainstream society.
- In Jammu & Kashmir, the increase in terror activities, is a major concern.

Fact Box: Agencies Responsible for Fighting Terrorism in India

- **Central Reserve Police Force (CRPF):** This 165,000-strong force assists police in maintaining internal security and is particularly active in regions like Kashmir.
- **Indian Army:** Generally involved as a last resort in counterterrorism operations, except in Jammu and Kashmir, where they have a consistent presence.
- **Intelligence Agencies**

- ▶ **Research and Analysis Wing (RAW):** India's external intelligence agency, responsible for gathering and analyzing intelligence on foreign threats.
- ▶ **Intelligence Bureau (IB):** Operating under the Ministry of Home Affairs, the IB collects domestic intelligence and oversees the interagency counterterrorism center.
- ▶ **Joint Intelligence Committee:** Analyzes data from RAW, IB, and military intelligence agencies to provide a comprehensive view of terrorist threats.
- **Ministry of Home Affairs:** It oversees national police, paramilitary forces, and domestic intelligence gathering.
- **Ministry of External Affairs:** Manages diplomatic counterterrorism efforts, including briefing other nations on issues such as suspected terrorism sponsorship by Pakistan.

PYQ

- Q. Analyse the complexity and intensity of terrorism, its causes, linkages and obnoxious nexus. Also suggest measures required to be taken to eradicate the menace of terrorism. (2021)
- Q. For effective border area management, discuss the steps required to be taken to deny local support to militants and also suggest ways to manage favourable perception among locals. (2020)



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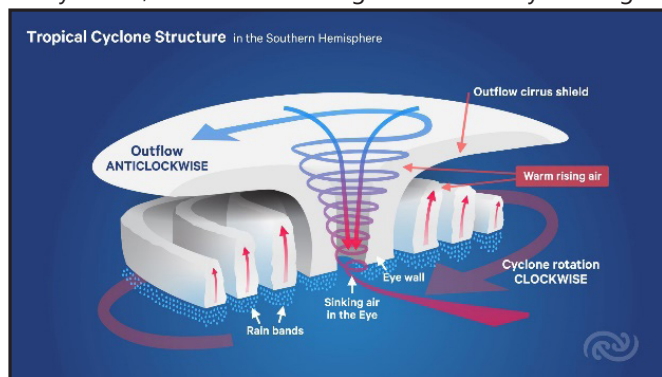
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1. CYCLONE REMAL

CONTEXT: Cyclone Remal made landfall between West Bengal's Sagar Island and Bangladesh's Khepupara. It is the first pre-monsoon tropical cyclone in the Bay of Bengal this year.

Cyclones in India

- The Indian subcontinent, with a coastline of 7,516 km, is one of the worst-affected regions in the world for cyclones.
- India is exposed to nearly 10% of the world's tropical cyclones, most of which originate in the Bay of Bengal.



- Cyclones are atmospheric disturbances around a low-pressure area with fast and often destructive air circulation, violent storms, and heavy rainfall.
- In the Northern Hemisphere, air circulates inward anticlockwise, while in the Southern Hemisphere, it circulates clockwise. Reason- Coriolis force
- **Eye:** The centre of a cyclone is called the eye of the storm (calm area). Its diameter varies from 10 to 30 km.
- Inside the cyclone eye, the temperature is greater than 28°C and the dewpoint is less than 0°C.
- **Categories of Cyclones**
 - **Category 1:** Wind speed of 120-150 km/h, minimal damage capacity.
 - **Category 2:** Wind speed of 150-180 km/h, moderate damage capacity.
 - **Category 3:** Wind speed of 180-210 km/h, extensive damage capacity.
 - **Category 4:** Wind speed of 210-250 km/h, extreme damage capacity.
 - **Category 5:** Wind speed of 250 km/h and above, catastrophic damage capacity.

Fact Box: Naming of Cyclone

- The **World Meteorological Organization (WMO)** established the **Panel on Tropical Cyclones (PTC)** in 1972 to improve cyclone warning and disaster mitigation in the **North Indian Ocean**.
- The PTC originally included eight countries: **Bangladesh, India, Maldives, Myanmar, Pakistan, Sri Lanka, Oman, and Thailand**.

- In 2000, the PTC decided to start naming tropical cyclones in the **Bay of Bengal** and the **Arabian Sea**. After collecting name recommendations from each member country, the PTC finalized the list and began naming cyclones in 2004.
- In 2018, the PTC expanded to include **Iran, Qatar, Saudi Arabia, the United Arab Emirates, and Yemen**.
- In 2020, a new list of 169 cyclone names—13 from each of the 13 countries—was released. This list is currently used to name cyclones in the region.

PYQ

Q. Consider the following statements: (2020)

1. Jet streams occur in the Northern Hemisphere only.
2. Only some cyclones develop an eye.
3. The temperature inside the eye of a cyclone is nearly 10°C lesser than that of the surroundings.

Which of the statements given above is/are correct?

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

Solution: (b)

2. UN AWARD FOR GENDER ADVOCACY

CONTEXT: Indian Army Major Radhika Sen has been selected to receive a UN award recognising her advocacy for women and girls while serving as a peacekeeper. She served with the Organization Stabilization Mission in the Democratic Republic of the Congo (MONUSCO). Major Sen is the second Indian peacekeeper to receive this honor, the first was Major Suman Gawani.

About U.N. Peacekeeping Mission

- The UN Peacekeeping mission is a collaborative effort between the **Department of Peace Operations** and the **Department of Operational Support**.
- Its goal is to help host countries transition from conflict to peace.
- The UN's peacekeeping efforts began in **1948**, with the deployment of military observers to West Asia to monitor the Armistice Agreement between Israel and its Arab neighbors.
- India has been among the largest troop-contributing countries to the **U.N. peacekeeping missions**.
- In 2007, India became the first country to deploy an **all-women contingent** to a U.N. Peacekeeping mission.

Fact Box: MONUSCO

- The **United Nations Organization Stabilization Mission in the Democratic Republic of the Congo (MONUSCO)** is a UN peacekeeping force established by the United Nations Security Council through resolutions 1279 (1999) and 1291 (2000).
- India is one of the largest contributors of troops to **UN peacekeeping missions**, with significant personnel involved in MONUSCO.
- Of the 6,063 Indian personnel in UN peacekeeping operations, 1,954 are with MONUSCO, including 32 women.

3. RIGHT TO VOTE IN IMPRISONMENT

CONTEXT: India's legal framework allows individuals facing criminal charges to contest elections but restricts their right to vote if they are imprisoned. While these statutory rights can be regulated or repealed by law, significant challenges and exceptions exist within the system.

Key-Provisions

- In India, the **right to vote** and the **right to be elected** are statutory rights, not fundamental rights, as affirmed by the Supreme Court.
- While individuals facing criminal charges can contest elections unless convicted, they are barred from voting if imprisoned, as per **Section 62 of the Representation of People Act (RP Act)**.
- Conviction triggers **disqualification** from contesting elections, effective from the date of conviction and extending six years post-release, according to **Section 8 of the RP Act**.
- Exceptions exist where the **Election Commission** can reduce **disqualification periods** or when convictions are stayed on appeal.

4. NEW ROAD CONSTRUCTION GUIDELINES

CONTEXT: Indian roads and highways often suffer from cracks and sticky surfaces during the summer heat. To address these issues and make highways smoother and safer, the Ministry of Road Transport and Highways (MoRTH) has introduced new guidelines for road construction.

Key-highlights of the Guidelines

- **Temperature and Traffic-Based Materials:** The surfacing material for all new road projects will be

chosen based on **temperature variations** and **axle load (traffic weight)**.

- **Bituminous Binders:** Different grades of bituminous binders will be specified based on factors such as **ambient temperature, rainfall, snowfall, and speed**. These binders are crucial in creating a **durable and flexible road surface**.
- **Climate Considerations:** It includes specific mixes for **different climatic zones** across India to ensure that the road materials used are appropriate for the local environmental conditions.
- **Application:** These guidelines will apply to all new road projects. Additionally, the quality of highways will be checked during the **re-laying of existing roads**.

Fact Box: India's Road Network

- India boasts the **world's second-largest road network**, covering approximately 6.671 million kilometers. Despite national highways constituting just 2% of this network, they carry over 40% of the total traffic.
- **National Highways:** 599 highways, spanning 146,145 kilometers (as of December 2023).
- **Classification of Highways:** North-South Corridors, East-West Corridors, Golden Quadrilateral, 3-D Highways
- **Key Organizations:** Ministry of Road Transport and Highways (MoRTH), National Highways Authority of India (NHAI), Border Roads Organization (BRO), National Highways and Infrastructure Development Corporation Ltd (NHIDCL)
- **Government Initiatives:** Bharatmala Pariyojana, 100% Foreign Direct Investment (FDI), GIS mapping of all national highways

5. PROJECT UDBHAV

CONTEXT: The Indian Army is preparing for future conflicts by drawing insights from ancient Indian texts like the *Vedas*, *Puranas*, and the *Mahabharata*.

About Project Udbhav:

- **Launched in:** 2023

- Project Udbhav is a bold initiative aimed at gleaning wisdom from **India's rich heritage** to enhance its preparedness for future conflicts.
- This project marks a significant departure from the **conventional reliance on Western military strategies**.
- Central to Project Udbhav is a deep dive into ancient Indian texts, including the **Vedas, Puranas, Upanishads, and Arthashastra**.
- These texts offer invaluable insights into **governance, strategy, and the ethics of warfare**, providing a treasure trove of knowledge for contemporary military planning.

6. RBI'S PRAVAAH PORTAL

CONTEXT: The Reserve Bank of India (RBI) has introduced three key initiatives: the **PRAVAAH portal, the Retail Direct Mobile App, and a FinTech Repository**. These initiatives aim to facilitate easier interaction between individuals, entities, and the apex bank.

About PRAVAAH Portal

- The **PRAVAAH (Platform for Regulatory Application, Validation, and Authorisation) portal** allows individuals and entities to apply online for various regulatory approvals.
- It is a secure, centralized web-based portal for seeking authorization, licenses, or regulatory approvals from the RBI.
- Benefits:** The portal is designed to improve the efficiency of the RBI's regulatory approval and clearance processes.

Fact Box: Retail Direct Mobile App

- The Retail Direct Mobile App provides retail investors with easy access to the platform for transactions in **government securities (G-Secs)**.
- Background:** The retail direct portal was initially launched in November 2021 to help retail investors open **Retail Direct Gilt accounts** with the RBI under the **Retail Direct Scheme**.
- Gilt Accounts:** A gilt account is a savings account that holds government securities instead of cash.
- Functionality:** The scheme allows retail investors to buy G-Secs in primary auctions and trade them in the secondary market.

FinTech Repository

- Purpose:** The FinTech Repository will hold information on the Indian fintech sector.
- Benefits:** It aims to provide a better understanding of the sector from a regulatory perspective and help in designing appropriate policy approaches.

7. INDIA'S SPICE TRADE

CONTEXT: Hong Kong and Singapore recently recalled certain spice mix products of Indian brands over the presence of a higher than prescribed level of the sterilising agent Ethylene Oxide (ETO). Though, steps are initiated several measures to ensure that Indian spices comply with food safety standards, the Indian spice market has got impacted.

India's Spice Market

- In 2023-2024, India exported spices worth USD 4.4 billion (nearly 14 lakh tonnes), which is 12.3% higher than the FY 2022-2023.
- Largest exported products (spice) in FY 2022-23:** Chilli, spice oils and oleoresins, curry powder and paste, cumin, mint products, cardamom and pepper
- Production:** Garlic, ginger and chilli were the top three spices produced in FY23.
- Important markets for Indian spices:** China, Bangladesh, west Asian countries and the U.S.

Fact Box: About Spices Board of India

- Founded:** 1987
- The Spices Board is the leading organization dedicated to the growth and global promotion of Indian spices.
- Its main tasks include promoting the export of **52 specified spices** and the **development of cardamom**.
- Ministry Affiliation:** It operates under the **Ministry of Commerce and Industry**.
- Commodity Boards:** The Spices Board is one of **five statutory Commodity Boards** under the **Department of Commerce**. These boards oversee the production, development, and export of key commodities such as **tea, coffee, rubber, spices, and tobacco**.

8. WEF'S TRAVEL & TOURISM DEVELOPMENT INDEX 2024

CONTEXT: India has climbed to the **39th spot in the World Economic Forum's Travel & Tourism Development Index 2024**, marking a significant rise from its 2021 ranking of 54th.

Key-findings:

- Topic 10 countries:** United States, Spain, Japan, France, Australia, Germany, the United Kingdom, China, Italy and Switzerland.
- The United States claimed the top position.

- Among the world's top 10 economies, India had the sharpest decline (compared to 2019 levels), followed by the UK, which slipped three spots to seventh.
- China have also seen a significant increase in tourism numbers this year, while the Middle East has seen tourism levels jump to about 20% above pre-pandemic levels.
- Africa, Europe and the Americas also showed considerably high recovery rates of around 90% last year.

FLYING HIGH

Rank	Country	Score
1	US	5.24
2	Spain	5.18
3	Japan	5.09
4	France	5.07
5	Australia	5.00
6	Germany	5.00
7	United Kingdom	4.96
8	China	4.94
9	Italy	4.90
10	Switzerland	4.81
39	India	4.25

Source: 2024 Travel & Tourism Development Index by WEF

Findings for India

- Despite the challenges posed by the pandemic, India emerged as the **highest-ranking country in South Asia** and among the **lower-middle-income economies**.
- The country demonstrated high price competitiveness (18th) and boasted competitive air transport (26th) and ground and port infrastructure (25th). Particularly noteworthy were India's robust natural (6th), cultural (9th), and non-leisure (9th) resources, which contributed significantly to driving travel.
- India was among the top three countries scoring in the top 10 for all resource pillars.
- Despite a slight decline compared to 2019, India still scored well for travel and tourism demand sustainability, with a focus on sustainable long stays among inbound visitors.
- Challenges:** Challenging business environment, inadequate transport, information technology, infrastructure and tourist facilities

Fact Box: About Travel & Tourism Development Index (TTDI)

- TTDI is brought out jointly by WEF and the University of Surrey.
- The index comes out **every two years** and evaluates 119 countries on a range of tourism development factors.

Government Schemes Promoting Tourism

- PRASHAD
- Swadesh Darshan
- SAATHI
- Dekho Apna Desh
- NIDHI

9. INDIA'S TRADE DEFICIT WITH TOP PARTNERS

CONTEXT: India faced a trade deficit with nine out of its top ten trading partners in

the fiscal year 2023-24, according to official data. While the deficit widened with some countries, it narrowed with others, influencing India's overall trade balance.

Key Points:

- Deficit Trends:** India's trade deficit increased with China, Russia, Korea, and Hong Kong in 2023-24 compared to the previous fiscal year.
 - However, the deficit narrowed with the UAE, Saudi Arabia, Russia, Indonesia, and Iraq during the same period.
- Trade Partners:** China emerged as India's largest trading partner with \$118.4 billion in two-way commerce, surpassing the US. Bilateral trade with the US stood at \$118.28 billion in 2023-24.
- Free Trade Agreements:** India has free trade agreements with Singapore, the UAE, Korea, and Indonesia, contributing to its trade dynamics.
- Surplus and Deficit:** India maintained a trade surplus of \$36.74 billion with the US in 2023-24, along with surpluses with the UK, Belgium, Italy, France, and Bangladesh.
- However, the overall trade deficit for India **decreased to \$238.3 billion** compared to the previous fiscal.
- Negative impacts of trade deficit:** Currency depreciation, increased borrowing from foreign lenders, and decreased foreign investment.

Fact Box: About Trade Deficit

- A trade deficit occurs when a country's imports exceed its exports. A trade deficit is also referred to as a **negative balance of trade (BOT)**.
- Trade Balance formula is as follows.
- Trade Balance = Total Value of Exports – Total Value of Imports**
- If the trade balance is negative — i.e. the country is in a trade deficit
- Trade Deficit Calculation:** Trade deficit encompasses all international trade transactions, including goods and services, on both capital and current accounts.
 - Capital account** transactions involve asset transfers like infrastructure, trademark or mining rights sales.
 - Current account** transactions include primary income (e.g., dividends, interest, remittances) and secondary income (e.g., private remittances, pension payments, government aid).
- Balance of Payments:** It is a systematic record of all economic transactions between the residents of a country and the rest of the world.

PYQ

Q. With reference to the international trade of India at present, which of the following statements is/are correct? (2020)

1. India's merchandise exports are less than its merchandise imports.
2. India's imports of iron and steel, chemicals, fertilizers and machinery have decreased in recent years.
3. India's exports of services are more than its imports of services.
4. India suffers from an overall trade/current account deficit.

Select the correct answer using the code given below:

- (a) 1 and 2 only
- (b) 2 and 4 only
- (c) 3 only
- (d) 1, 3 and 4 only

Solution: (d)

Q. Consider the following actions which the Government can take: (2011)

1. Devaluing the domestic currency.
2. Reduction in the export subsidy.
3. Adopting suitable policies which attract greater FDI and more funds from FIIs.

Which of the above action/actions can help in reducing the current account deficit?

- (a) Only 1 and 2
- (b) Only 2 and 3
- (c) Only 3
- (d) Only 1 and 3

Solution: (d)

10. RUDRAM-II ANTI-RADIATION MISSILE

CONTEXT: India has successfully test-fired the Rudram-II anti-radiation supersonic missile from a Su-30MKI fighter jet.

About Rudram-II Missile:

- **Developed by:** Defence Research and Development Organisation (DRDO).
- The Rudram missile is **India's first indigenously developed anti-radiation missile.**
- It is designed to target enemy ground radars and communication stations as part of **Suppression of Enemy Air Defence (SEAD) missions.**

- **Advanced Version:** The Rudram-II is the latest version, following the Rudram-I which was tested four years ago.
- **Range and Speed:** The Rudram-II can pick up enemy radio frequencies and signals from radars over a range of more than 100 km. It features a **Lock-On-Before/After-Launch system**, and its internal guidance system allows it to direct itself towards the target post-launch.
- **Altitude Versatility:** The missile can be launched from various altitudes, making it highly adaptable in different combat scenarios.

Fact Box: Rudram-I

- The Rudram-I version was first test-fired from a **Sukhoi jet** in 2020 off the east coast of Odisha.
- It has a range of 100-150 km, speeds of up to Mach 2, and a launch altitude range of 1 km to 15 km.
- The Rudram-I is equipped with a passive-homing head seeker and a Millimetre Wave (MMW) seeker, enabling it to detect targets over a range of radio frequencies and operate in various weather conditions.

11. NEW LIGHT-BASED TOOL DETECTS VIRAL INFECTIONS

CONTEXT: Researchers have developed a new tool that can detect viral infections in cells using only light and basic physics. This tool identifies if cells are infected by observing how light is distorted when it passes through them.

How does it work?

- When a cell is infected by a virus, it undergoes changes in shape, size, and features. The researchers infected pig testicle cells with **pseudorabies virus**, shone light through them, and recorded how the light was distorted.
- They compared these patterns to those from healthy cells, finding distinct **'fingerprints'** of infection.
- The tool uses **diffraction patterns**, which occur when light waves spread out after passing through narrow openings or around small objects.
- The researchers analyzed the contrast between light and dark stripes in these patterns, and a mathematical value called the inverse differential moment, to differentiate between uninfected, infected, and dead cells.

12. INDIA'S FIRST QUANTUM DIAMOND MICROCHIP IMAGER

CONTEXT: IIT Bombay and Tata Consultancy Services (TCS) have joined hands to pioneer India's inaugural Quantum Diamond Microchip Imager. This cutting-edge sensing tool is anticipated to revolutionize semiconductor chip

examination, mitigate chip failures, and enhance the energy efficiency of electronic devices.

About

- The **Quantum Diamond Microchip Imager** utilizes defects in a diamond's structure, known as **Nitrogen-Vacancy (NV) centers**, to non-invasively map semiconductor chip anomalies, akin to MRI in healthcare.
- It boasts advanced diagnostic capabilities, including identifying chip defects such as current leakages and visualizing three-dimensional charge flow in multi-layer chips.
- Semiconductor chips underpin modern electronic devices, endowing them with intelligence and efficiency, and are vital across diverse sectors like **communications, computing, healthcare, military systems, transportation, and clean energy**.
- **National Quantum Mission Alignment:** The partnership resonates with the National Quantum Mission, positioning India as a global quantum technology frontrunner.

13. GOLDEN RICE

CONTEXT: A recent court ruling in the Philippines has garnered international attention for its implications on the commercial propagation of genetically modified (GM) golden rice and Bt eggplant.

About

- Golden rice, named for its vibrant yellow hue, was developed to address **micronutrient deficiencies** by enhancing levels of **iron, zinc, and beta-carotene**, a precursor to **vitamin A**.
- In 2021, the Philippines became the first nation to approve the commercial production of golden rice.
- Proponents of GM crops argue that the decision could have detrimental effects on children suffering from vitamin A deficiency.
- **Global Impact of Vitamin A Deficiency**
 - ▶ Vitamin A deficiency is a condition classified as a **public health problem** by the World Health Organization.
 - ▶ It affects approximately one-third of children aged 6 to 59 months globally, with the highest prevalence observed in sub-Saharan Africa (48%) and South Asia (44%).

Fact Box: Micronutrients

- Micronutrients are vitamins and minerals needed by the body in very small amounts.
- However, their impact on a body's health are critical.
- Deficiency in any of them can cause severe and even life-threatening conditions.
- They perform a range of functions, including enabling the body to produce enzymes, hormones and other substances needed for normal growth and development.
- **Example:** Vitamins A, D, E, and K, Iron, manganese, copper, zinc, iodine, fluoride, selenium, calcium, phosphorus, magnesium, sodium, chloride, potassium, sulphur

14. MICROCEPHALY AND THE ROLE OF THE SASS6 GENE

CONTEXT: Recent research confirmed the SASS6 gene's role in microcephaly and neuron development.

What is Microcephaly?

- Microcephaly is a condition where a baby's head is much smaller than normal.
- Children with microcephaly often have a **small brain, poor motor skills, speech difficulties, abnormal facial features, and intellectual disabilities**.
- The condition originates during the peak phase of brain development in the embryo when cells that should become neurons fail to divide normally.
- It can be diagnosed before birth using ultrasound and MRI.
- **Consanguineous marriages:** Marriages between close relatives, such as first cousins, increase the risk of microcephaly. This is because the chance of inheriting two mutated copies of a gene, including the SASS6 gene, is higher.

The Role of the SASS6 Gene

- The SASS6 gene is crucial for **cell division**, particularly in forming structures called **centrioles**, which are essential for this process.
- Since 2014, this gene has been linked to microcephaly. If one copy of the SASS6 gene is non-functional, the other can partially compensate. However, if both copies are non-functional, the embryo dies before becoming a fetus.
- This shows the critical role of the SASS6 gene in early development.

15. ASTRONOMICAL TRANSIENTS

CONTEXT: Indian-American astronomer Shrinivas Kulkarni won the Shaw Prize for

Astronomy in 2024. He was awarded for his research on the physics of astronomical transients.

What is a Transient in Astronomy?

- Astronomical transients are celestial objects whose brightness changes quickly.
- They're interesting because they're usually linked to violent events in space.
- **Examples of Astronomical Transients:**
 - ▶ **Supernovae:** These occur when big stars explode, becoming incredibly bright.
 - ▶ **Active Galactic Nuclei (AGN):** Massive galaxies' centers host supermassive black holes that sometimes consume nearby matter. These interactions make the matter glow with changing brightness.
 - ▶ **Fast Radio Bursts (FRBs):** Discovered in 2007, these are mysterious bursts of radio waves that release huge amounts of energy in milliseconds. Despite being hard to detect, hundreds have been found.

PYQ

Q. Consider the following pairs: (2023)

Objects in space : Description

1. Cepheids : Giant clouds of dust and gas in space
2. Nebulae : Stars which brighten and dim periodically
3. Pulsars : Neutron stars that are formed when massive stars run out of fuel and collapse

How many of the above pairs are correctly matched?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Solution: (a)

16. WIPO TREATY

CONTEXT: The World Intellectual Property Organization (WIPO) adopted a groundbreaking treaty on Intellectual Property, Genetic Resources, and Associated Traditional Knowledge. This marks the 27th treaty under WIPO and the first in a decade.

Background:

- Negotiations began in 2021, originating from a proposal by Colombia in 1999.
- The diplomatic conference in Geneva finalized the treaty, showcasing a historic moment.

Key Provisions:

- This is the **first WIPO Treaty** to address the interface between **intellectual property, genetic resources and traditional knowledge** and the first WIPO Treaty to include **provisions specifically for Indigenous Peoples** as well as local communities.
- Once it enters into force, the treaty will establish in **international law** a new disclosure requirement for patent applicants whose inventions are based on genetic resources and/or associated traditional knowledge.
- It addresses concerns about **patents derived from traditional knowledge**, a prevalent issue.
- Broadly, where a claimed invention in a **patent application** is based on genetic resources, each contracting party shall require applicants to disclose the country of origin or source of the genetic resources.
- Where the claimed invention in a **patent application** is based on **traditional knowledge** associated with genetic resources, each contracting party shall require applicants to disclose the **Indigenous Peoples or local community**, as applicable, who provided the **traditional knowledge**.
- **Significance for India:**
 - ▶ India, with its vast biodiversity and traditional knowledge, finds the treaty crucial. India holds 7-8 per cent of global biodiversity and a rich repertoire of knowledge based on these genetic resources.
 - ▶ The treaty underscores collective efforts to address pertinent issues, despite some unresolved nuances.
- **Challenges:** Despite progress, the treaty doesn't fully tackle biopiracy concerns. Non-disclosure of traditional knowledge sources in patents remains unaddressed.

Fact Box: About WIPO

- **Founded:** 1967
- **Headquarters:** Geneva, Switzerland
- World Intellectual Property Organization (WIPO) is the **United Nations agency** that serves the world's innovators and creators, ensuring that their ideas travel safely to the market and improve lives everywhere.

17. WET BULB TEMPERATURE

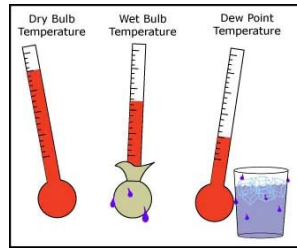
CONTEXT: North India is experiencing a severe heatwave along with high temperatures and humidity. This has also brought the wet bulb temperature concept into mainstream conversation.

Measuring Humidity

- Humidity levels are often determined using three main temperature readings:

- ▶ Dry bulb
- ▶ Wet bulb
- ▶ Dew point

- The Wet bulb temperature, in particular, plays a crucial role in understanding humidity levels.
- It is the lowest temperature that can be achieved by evaporating water into the air at constant pressure.
- This temperature is measured by covering a **thermometer bulb** with a **wet cloth**, allowing the water to evaporate and cool the **thermometer**, thus indicating the **Wet bulb temperature**.
- This information is vital for various sectors, including **comfort assessment, agriculture, and weather prediction**.
- In simpler terms, wet bulb temperature tells at what level human bodies will be unable to cool themselves down by sweating. In this case, the threat of a **heat stroke** rises dramatically.
- Wet bulb temperature combines heat and humidity to indicate how much evaporation can be absorbed into the air.
- It measures the lowest temperatures that our bodies can reach when we are in hotter environments, by sweating.



Dry bulb and Wet bulb temperatures

- The difference between the Dry bulb and Wet bulb temperatures depends on humidity levels.
- Higher humidity results in less evaporation and a smaller temperature difference.
- When the air is fully saturated (100% humidity), the Wet bulb and Dry bulb temperatures are identical.

Fact Box: About Dew Point

- Dew point is the temperature to which **air must be cooled for water vapor** in it to condense into dew or frost.
- At any temperature there is a maximum amount of water vapor that the air can hold.
- This maximum amount is called **water vapor saturation pressure**. Addition of more water vapor results in **condensation**.

18. VENEZUELA BECOMES FIRST COUNTRY TO LOSE ALL GLACIERS

CONTEXT: Venezuela has lost its final glacier in the Sierra Nevada de Mérida mountain range. This loss marks a significant event, making Venezuela likely the first country in modern times to lose all its glaciers.

About



- At one time, the country was home to six glaciers, but by 2011, five had vanished, leaving only the **Humboldt glacier**, also called **La Corona**, near **Pico Humboldt**.
- Initially, scientists believed the Humboldt glacier would endure for another decade. However, the glacier had melted much faster than anticipated. Its size had dwindled to less than **2 hectares**, prompting its **reclassification** from a **glacier** to an **ice field**.
- Unfortunately, Venezuela is not alone in facing this crisis. **Indonesia's Papua island, Mexico, and Slovenia** are among the next countries expected to become glacier-free.

Fact Box: About Glacier

- A glacier is a **large, perennial accumulation of crystalline** ice, snow, rock, sediment, and often liquid water that originates on land and moves down slope under the influence of its own weight and gravity.
- Glaciers are classified by their size (i.e. ice sheet, ice cap, valley glacier, cirque glacier), location, and thermal regime (i.e., polar vs. temperate).
- Glaciers form as snow accumulates and compresses into many layers of ice through a process called snow **metamorphism**.

19. BRAIN-EATING AMOEBIA (NAEGLERIA FOWLERI)

CONTEXT: A five-year-old girl in Malappuram district of Kerala lost her life as she was afflicted by amoebic meningoencephalitis, which is a rare brain infection. The brain infection was caused by a free-living amoeba, *Naegleria fowleri*, found in contaminated waters.

About

- Naegleria fowleri, often referred to as the “**brain-eating amoeba**”, is a species of the genus Naegleria.
- It belongs to the **phylum Percolozoa** and is technically classified as an **amoebflagellate excavate**, rather than a true **amoeba**.
- This free-living microorganism primarily feeds on bacteria but can become pathogenic in humans, causing an extremely rare, sudden, severe, and usually fatal brain infection known as **naegleriasis or primary amoebic meningoencephalitis (PAM)**.
- Naegleria fowleri is a **thermophilic and free-living amoeba**, primarily found in warm and hot freshwater environments such as ponds, lakes, rivers, hot springs, and poorly maintained swimming pools.
- N. fowleri exists in three forms: **cyst, trophozoite (ameboid), and biflagellate**.
- The most common way of being infected by this type of amoeba happens when infected water goes into your nose. From there, the amoeba goes to your brain.
- Infection with Naegleria causes primary **amoebic meningoencephalitis** which causes inflammation in the brain and destruction of brain tissue.
- **Symptoms:** fever, nausea, vomiting, seizures, altered mental state, sleepiness or drowsiness, loss of balance, severe and sudden headache, stiff neck, photophobia - sensitivity to light, and hallucinations.



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SECTION C

TERMS OF THE WEEK

S.No.	Term	About
1	Balance Of Payment	<ul style="list-style-type: none"> Balance Of Payment is a statement which records the monetary transactions made between residents of a country and the rest of the world.
2	Central pool (FCI)	<ul style="list-style-type: none"> The central pool is used for providing foodgrains under the Public Distribution System (PDS) and other welfare schemes, and also kept as reserve in the form of buffer stock.
3	Contingent Risk Buffer (CRB)	<ul style="list-style-type: none"> CRB refers to the risk provisioning made from economic capital to cover monetary, fiscal stability, credit and operation risks.
4	Desertification	<ul style="list-style-type: none"> Desertification is the persistent degradation of dryland ecosystems by variations in climate and human activities.
5	Fintech	<ul style="list-style-type: none"> Fintechs—short for financial technology—are companies that rely primarily on technology to conduct fundamental functions provided by financial services, affecting how users store, save, borrow, invest, move, pay, and protect money.
6	Fast radio burst	<ul style="list-style-type: none"> A fast radio burst is a bright and brief burst of electromagnetic radiation (light) seen in radio-wave frequencies.
7	Genetic modification (Plants)	<ul style="list-style-type: none"> Genetic modification of plants involves adding a specific stretch of DNA into the plant's genome, giving it new or different characteristics. This could include changing the way the plant grows, or making it resistant to a particular disease.
8	Gilt account	<ul style="list-style-type: none"> A gilt account is designed to hold government securities and is maintained by an entity or an individual with a custodian which could either be a bank or a Primary Dealer or a financial institution that is permitted by the Reserve Bank of India to operate, what is termed as, a Constituents Subsidiary General Ledger Account (CSGL) with the RBI.
9	Low-Pressure Area	<ul style="list-style-type: none"> A low-pressure area, low area or low is a region where the atmospheric pressure is lower than that of surrounding locations.
10	Minimum Support Price (MSP)	<ul style="list-style-type: none"> It is the assured price at which foodgrains are procured from farmers by the central and state governments and their agencies, for the central pool of foodgrains.
11	Micronutrient deficiency	<ul style="list-style-type: none"> Micronutrient deficiency is the sustained insufficient supply of vitamins and minerals needed for growth and development, as well as to maintain optimal health.
12	Neurons	<ul style="list-style-type: none"> Neurons are nerve cells that send messages all over your body to allow you to do everything from breathing to talking, eating, walking, and thinking.
13	Procurement	<ul style="list-style-type: none"> Procurement refers to purchases of grains by the Food Corporation of India (FCI), the Centre's main grain-handling agency, at federally determined floor prices
14	Patent	<ul style="list-style-type: none"> A patent is an intellectual property right to protect inventions, granted by a country's government as a territorial right for a limited period.
15	Polar Satellite Launch Vehicle (PSLV)	<ul style="list-style-type: none"> PSLV is the third generation launch vehicle of India. It is the first Indian launch vehicle to be equipped with liquid stages.
16	Personality Rights	<ul style="list-style-type: none"> Personality rights, sometimes referred to as the right of publicity, are rights for an individual to control the commercial use of their identity, such as name, image, likeness, or other unequivocal identifiers. They are generally considered as property rights, rather than personal rights

17	Preservation Bias	<ul style="list-style-type: none">◦ Preservation bias refers to the phenomenon where certain kinds of objects or organisms are more likely to be preserved and discovered than others due to their material, location, or time period.
18	Rangeland	<ul style="list-style-type: none">◦ Rangeland is any extensive area of land that is occupied by native herbaceous or shrubby vegetation which is grazed by domestic or wild herbivore
19	Statutory rights	<ul style="list-style-type: none">◦ Statutory rights are those provided for by any laws passed by Parliament. These rights can be enforced in courts provided for in the law itself, and can also be curtailed or completely removed by bringing in amendments to the law.
20	Windfall gain	<ul style="list-style-type: none">◦ A windfall gain is an unexpected, sudden, or unearned advantage or income. Some examples of windfall gains include: Winning the lottery, An inheritance





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