

Factly Weekly

Compilation

2024

**For UPSC CSE Prelims
Exam**

**1st Week
March 2024**

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Subject: Polity and Nation

Cross-voting in Rajya Sabha elections

Why in the News?

The recent Rajya Sabha elections in Uttar Pradesh, Himachal Pradesh, and Karnataka saw MLAs from various parties engaging in cross-voting. This has sparked concerns regarding the integrity of the election process.

How are Rajya Sabha elections held?

1. Constitutional Provision: According to Article 80 of the Constitution, Rajya Sabha representatives from each State are indirectly elected by the elected members of their Legislative Assembly.

2. Historical background- Before 1998, the outcome of Rajya Sabha elections were usually a foregone conclusion, as the candidates were nominated by various parties in accordance to their strength in the Assembly. Hence, they used to be elected unopposed. However, the June 1998 elections in Maharashtra saw cross-voting, breaking this tradition.

Legal provisions and precedent for curbing cross voting

1. Open Ballot system:

- a. To prevent MLAs from cross-voting, an amendment to Section 59 of Representation of the People Act, 1951 was made in 2003. This amendment introduced open ballot voting in Rajya Sabha elections.
- b. MLAs from political parties must display their ballot papers to their party's authorized agent. Failure to do so or showing it to anyone else will invalidate the vote. Independent MLAs cannot show their ballots to anyone.

2. Tenth Schedule:

- a. It introduced in 1985.
- b. This schedule states that if a member of a Parliament or State legislature voluntarily leaves their political party or votes against their party's instructions, they can be disqualified from the House. However it does not apply to Rajya Sabha elections

3. SC Court Rulings:

- a. The Supreme Court in Kuldip Nayar versus Union of India (2006) upheld the system of open ballot for Rajya Sabha elections.
- b. In the same case, the court also decided that a political party's elected MLA would not be disqualified under the Tenth Schedule for voting against their party candidate. They might face disciplinary action from their party at most.

Supreme Court overturns its verdict on Stay Order

Why in the News?

The Supreme Court recently overturned its decision in the Asian Resurfacing case. The Court stated that a Supreme Court bench in 2018 did not have the authority to establish a six-month time limit for lifting stay orders.

What did the 2018 bench rule in the Asian Resurfacing case?

Background:

- a. In 2018, a three-judge bench comprising Justices Adarsh Goel, Navin Sinha and Rohinton Nariman were deciding a batch of cases involving the **Prevention of Corruption Act**.
- b. These cases had one thing in common: the respective High Courts had granted a stay at some point during the trial.
- c. **Stay orders** are issued by courts to **temporarily halt legal proceedings**, protecting citizens' rights. A stay always postpones the trial, regardless of who benefits from it.

SC 2018 ruling in Asian Resurfacing case– To tackle the significant issue of delays in criminal trials, the Supreme Court ruled that **interim stay orders from High Courts and Civil Courts will only last for six months**. At the conclusion of this duration, they will be automatically revoked or “lifted”.

Impact of 2018 ruling

This decision raised several questions as follows:

Question 1– Can the Supreme Court, under **Article 142** of the Constitution (which empowers it to pass any order to ensure “complete justice”), order the automatic removal of all interim orders from High Courts that suspend proceedings of civil and criminal cases after a certain period has expired?

Question 2– Can the Supreme Court, under Article 142 of the Constitution, instruct the High Courts to resolve pending cases where interim stay orders on proceedings have been issued, on a daily basis and within a set timeframe?

Why was the 2018 ruling reversed?

1. **Lacked authority to set a timeline**– The court ruled that the Asian Resurfacing bench lacked the authority to establish a six-month deadline for lifting stay orders.
2. **Defeat justice**– The court stated that automatically lifting a stay order after six months would actually “defeat justice” by invalidating interim orders that had been legally issued without hearing the parties.
3. **Only legislature have the power**– The court mentioned that the six-month limit would be like creating laws from the bench, which is not allowed. Only the legislature can determine if certain cases should be resolved within a set period.

No immunity for MPs, MLAs in bribery cases: SC

Why in the News?

The Supreme Court recently ruled that parliamentary privilege or immunity would not shield legislators who accept bribes to vote or speak in Parliament or State Legislative Assemblies from criminal prosecution. The Supreme Court **overruled its judgment in the JMM bribery case of 1998**.

Background– In 1993, JMM leader Shibu Soren and some of his party MPs were accused of accepting bribes to vote against the **no-confidence motion** against the then P V Narasimha Rao government. **In 1998, a five-judge Supreme Court bench**, in its majority ruling, **dismissed the case** against the JMM MPs, **citing immunity under Article 105(2)**.

What was the recent ruling by the Supreme Court?

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Figure 1. Source- Hindustan Times

1. The court stated that legislators' freedom of speech and expression, along with their voting rights in the House, do not protect them from giving or taking bribes. Similarly, the **immunities provided under Article 105 and 194 also do not shield them in such cases.**
2. The **act of bribery is considered complete when the legislator accepts the bribe.** It doesn't matter if the legislator votes as agreed or doesn't vote at all.

Note– The reference came in an appeal filed by JMM leader Sita Soren, who was accused of taking a bribe to vote for a particular candidate in the 2012 Rajya Sabha elections.

What are the constitutional immunities for state legislature and parliament members?

1. **Article 194(2)** of the Constitution grants immunity to State Legislature members, while **Article 105(2)** provides the same protections to Parliament members.
2. **Article 105** of the Constitution addresses the authority, privileges, and immunities of Parliament and its members.
3. **Article 105(2)** states that no Member of Parliament can be held accountable in court for statements made or votes cast in Parliament or its committees.

Subject: Indian Economy

Non-lapsable defence modernisation fund

Why in the News?

The government has abandoned the proposal to establish a Non-lapsable Defense Modernization Fund, **citing drawbacks related to its impact on parliamentary scrutiny and accountability.**

About Non-lapsable defence modernisation fund

Background– The **15th Finance Commission** has proposed the establishment of a dedicated non-lapsable Modernisation Fund for Defence and Internal Security (MFDIS). The idea behind is to address the **disparity between projected budget needs and the allocation for defense and internal security.**

In 2021, the government placed an action-taken report in Parliament alongside the Commission's report. The government mentioned that it has "in-principle" agreed to create such a fund in the Public Account of India.

What is the need for Non-Lapsable Funds?

1. In India, the defense budget is assigned annually. At the close of each fiscal year, any **remaining funds are reverted to the government's consolidated fund.**
2. Consequently, the defense services miss the chance to utilize these allocated funds for unforeseen needs or future requirements. Establishing a Non-Lapsable Defense Modernization Fund (DMF) offers a solution to this challenge.

3. Once operational, the DMF would allow the three services to keep any unspent budget allocation beyond the fiscal year's end.

Why did the government abandon this proposal?

1. Traditionally, only funds raised through cesses for specific purposes are non-lapsable.
2. Apart from items funded through a cess, deferring today's allocations with the intention of using them later contradicts the fundamental principles of parliamentary financial accountability.
3. The government says it is working on a separate plan to explore a special arrangement for establishing a "Non-lapsable Defence Modernisation Fund."

Subject: Science & Technology

Roen olmi mushroom

Why in the News?

Researchers in Goa have claimed to have synthesized gold nanoparticles from the Roen olmi mushroom. It is a wild mushroom species that is widely consumed as a delicacy in the coastal state.

What is Roen olmi mushroom?



Figure 2. Source- Times of India

1. About:

- a. It is a mushroom of the *Termitomyces* species.
- b. It grows on termite hills and is called 'roen olmi' in Goa.
- c. It is a wild mushroom loved by Goans and eaten during the monsoons.

2. **Association with Termites**– These mushrooms rely solely on their association with termites for growth and cannot exist independently.

- a. Termites provide mushrooms the organic material they need to grow.
- b. Termites eat them to obtain enzymes and nitrogen.

3. **Habitat**– It is found only in the Western Ghats, where the dense forests and high humidity create perfect breeding conditions

4. **Significance**– It is crucial as a strong decomposing fungus in forests and grasslands, turning 50% of dead plant material into nutrient-rich soil.

5. **Concern**– It's over exploitation can cause outbreak of new forest diseases such as **Kyasanur Forest Disease (KFD)**

Termitomyces species

1. All *Termitomyces* species are edible and valued for their texture, flavour, nutrients, and health benefits.
2. They have a variety of beneficial antioxidant and antimicrobial properties.

Other types of Mushrooms in Goa

Local Name	Name derived from their characteristics
Khut olmi	Shape- Long stem
Fugo olmi	Balloon-shaped
Tamdi olmi	Red colour
Shith olmi	Fruiting season- winter

Haemophilia A

Why in the News?

Recently, India has conducted the first human clinical trial of gene therapy for 'haemophilia A' at Christian Medical College – Vellore.

What is Haemophilia A?

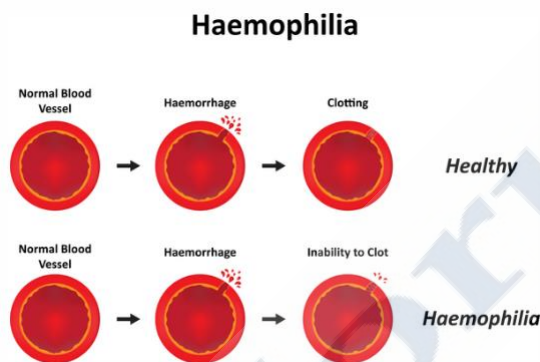


Figure 3. Source- Medicineplus

1. About- It is a **genetic bleeding disorder** caused by a **deficiency in clotting factor VIII (blood-clotting protein)**, which is necessary for blood clotting.

2. Sex-linked:

a. It is a sex-linked disorder determined by the X and Y chromosomes. The gene for hemophilia is **found on the X chromosome**.

b. Hemophilia is much **more common in males than in females**.

3. Symptoms- Prolonged bleeding after injuries, surgeries, or **spontaneous bleeding** into muscles and

joints.

4. Treatment:

a. It includes **replacement therapy**, where clotting factor concentrates are infused into the bloodstream to assist blood clotting.

b. Other treatments may involve medications to encourage clotting or surgery to mend bleeding-related damage.

Most common types of Hemophilia :

1. Hemophilia A (Classic Hemophilia)- This type is caused by a lack or decrease of clotting factor VIII.

2. Hemophilia B (Christmas Disease)- This type is caused by a lack or decrease of clotting factor IX.

India's first indigenously developed hydrogen fuel cell ferry

Why in the News?

Prime Minister recently launched India's first indigenously developed hydrogen fuel cell ferry. It was manufactured by the Cochin Shipyard Limited (CSL) under the Harit Nauka initiative.



Figure 4. Source- The Indian Express

What are its key features?

1. Design– It is a 24-meter catamaran which can accommodate 50 people in its air-conditioned passenger area. The accommodation is made of high-quality fiberglass reinforced plastic, resembling metro train coaches.

2. Propulsion– This boat uses a 50-kilowatt PEM (proton-exchange membrane) fuel cell along with Lithium-Ion Phosphate batteries. PEM fuel cells have the

advantage of quickly adjusting their output to match power demands.

3. Energy Source– This boat has five hydrogen cylinders that hold 40kg of hydrogen, providing support for eight hours of operations. Additionally, the vessel is equipped with a 3-kilowatt solar panel.

Note– A hydrogen fuel cell creates electricity using the chemical energy in hydrogen and only emits pure water, without releasing pollutants.

4. Indigenous components– CSL developed the vessel automation system and power management system. The hydrogen fuel cell system was developed by KPIT Technologies, Pune, in collaboration with the Council of Scientific and Industrial Research Labs.

5. Significance:

a. Environment Friendly– It produces zero emissions or noise, and it is energy-efficient. It will also make urban mobility smooth and easy.

b. Low maintenance cost– Since it has no moving parts, the ferry needs less maintenance than combustion vessels.

Harit Nauka Initiative:

1. In January 2024, the shipping ministry unveiled the Harit Nauka guidelines for inland vessels.
2. According to the guidelines, all states must aim to use green fuels for 50% of inland waterways passenger fleets within the next decade and 100% by 2045.
3. This aims to cut greenhouse gas emissions according to the Maritime Amrit Kaal Vision 2047.

Vikramaditya Vedic Clock

Why in the News?

The Vikramaditya Vedic Clock which is mounted on an 85-foot tower at Jantar Mantar in Ujjain, was inaugurated by the Prime Minister in a recent ceremony.



Figure 5. Source- Live mint

About Vikramaditya Vedic Clock

1. About- The 'Vedic Clock' is the world's first timepiece engineered to display time based on the ancient Indian traditional Panchang (time calculation system).

2. Developed by- Lucknow-based Sanstha Arohan

3. Features:

a. It offers details on planetary positions, Muhurat, astrological computations, and forecasts.

b. It also displays Indian Standard Time (IST) and Greenwich Mean Time (GMT).

c. It can be connected to the internet and offers numerous features through a mobile app named after the clock.

Note- Greenwich Mean Time (GMT) is the average solar time at the Prime Meridian, located at 0 degrees longitude in Greenwich, London. The Shepherd Gate Clock at the Royal Observatory in Greenwich always displays GMT.

4. Operational Mechanism- The clock will measure time between two sunrises.

a. The time span between the two sunrises will be split into 30 segments, with each hour comprising 48 minutes, according to ISD.

b. The measurement will begin at 0:00, coinciding with sunrise, and will continue for 30 hours (where each hour equals 48 minutes).

Why was Ujjain chosen for its establishment?

1. Ujjain has a long-standing heritage in timekeeping, spanning centuries. Ujjain has played a crucial role in establishing India's time zones and differences.

2. Ujjain is situated precisely at the intersection point of the zero meridian and the Tropic of Cancer.

3. Before the adoption of the 82.5E longitude for IST, Ujjain (75.78E) was regarded as India's time meridian.

4. The Vikrami Panchang and Vikram Samvat calendars are also released from Ujjain, making it the perfect location for the Vedic Clock.

MethaneSAT

Why in the News?

MethaneSAT, a satellite designed to track and measure methane emissions globally, was launched aboard a SpaceX Falcon9 rocket from California.

What is MethaneSAT?



Source- eoPortal

Aspect	Details
About	It is an Earth observation satellite designed to monitor and study global methane emissions to aid in combating climate change.
Launch date	March 4, 2024
Agencies Involved	The Environmental Defense Fund (EDF), Harvard University, the Smithsonian Astrophysical Observatory, and the New Zealand Space Agency .
Function	<ol style="list-style-type: none"> MethaneSAT will make 15 orbits around the Earth each day, observing the activities of the oil and gas industry. It will generate extensive data to indicate “where methane originates, who is accountable, and whether emissions are increasing or decreasing over time.” The data collected by MethaneSAT will be freely available to the public in almost real-time.
Features	<ol style="list-style-type: none"> The satellite, equipped with a high-resolution infrared sensor and a spectrometer, which will help fill important data gaps. It can detect changes in methane levels as small as three parts per billion in the atmosphere, allowing it to identify smaller sources of emissions compared to previous satellites. MethaneSAT also boasts a broad camera perspective, covering approximately 200 km by 200 km, enabling it to detect larger emitters known as “super emitters”.
Data Analysis	The data collected will be analyzed using cloud computing and AI technology developed by Google, which is a mission partner . This data will be publicly accessible through Google’s Earth Engine platform.

Why is it significant?

1. The launch of MethaneSAT coincides with a time when the world is adopting stricter methane management policies.
2. Over 150 countries signed the **Global Methane Pledge** in 2021, aiming to reduce their combined methane emissions by at least **30% from 2020 levels by 2030**.
3. Additionally, at **COP 28**, more than 50 companies pledged to significantly reduce methane emissions and routine flaring. **MethaneSAT will support these efforts by assisting in achieving these targets.**

India's second spaceport at Kulasekharapattanam (TN)

Why in the news?

Prime Minister Narendra Modi laid the foundation stone for the country's second spaceport at Kulasekarapattinam in Tuticorin district.

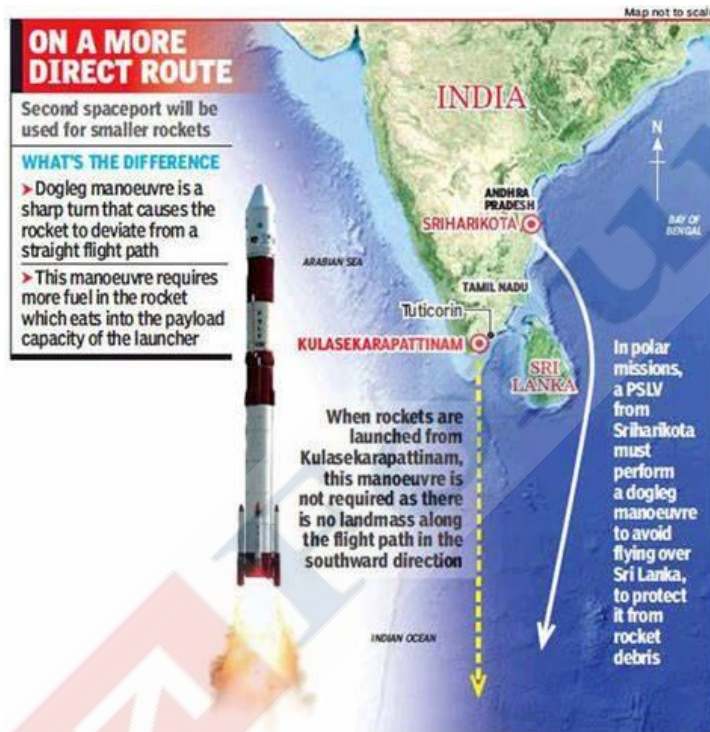


Figure 6. Source- Defenceforum.india

About India's second spaceport

1. **About:** A spaceport or cosmodrome is a site for launching or receiving spacecraft, by analogy to a seaport for ships or an airport for aircraft.

2. **Location:** India's second spaceport is being established in **Kulasekarapattinam**, a coastal village in the **Thoothukudi district of Tamil Nadu**.

Note: **Kulasekharapatnam** situated in the Thoothukudi district, is an **ancient port town** dating back to the **1st century AD**.

3. The new spaceport is **dedicated to Small Satellite Launch Vehicles (SSLVs)** developed by the private sector.

4. Indian Space Research Organization launched a **Rohini sounding rocket** from a mobile launch pad to mark the beginning of work at the site.

Reasons why launching sites are generally located on the Eastern Coast:

1. The eastern coast location offers several benefits for rocket launches:

a. Fuel Savings: Launching rockets from the eastern coast harnesses Earth's rotation, **granting them initial velocity** and **reducing fuel requirements for orbit**.

b. Equatorial Position: The spaceport's proximity to the **Equator** further enhances launch efficiency. Rockets launched closer to the Equator receive an additional boost from the Earth's rotational speed, making it **easier to reach orbit**.

Dry ice

Why in the news?

Recently, Dry ice mistakenly provided at a party in a Gurugram restaurant caused severe injuries to people's mouths and food pipes, leading to hospitalization.



Figure 7. Source- DownToEarth

About Dry Ice

1. About: Dry ice is **solid carbon dioxide (CO₂)** formed by **compressing and cooling carbon dioxide gas**.

2. Difference between regular ice and dry ice: Unlike regular ice, which melts into liquid water, **dry ice undergoes sublimation**, transitioning directly from a solid to a gas without going through a liquid phase. This sublimation process releases large volumes of CO₂ gas.

3. Applications:

- i) Dry Ice is commonly used as a **cooling agent for food products** like ice cream, frozen desserts etc.
- ii) Dry ice is also used for applications such as **preservation** and **for creating special effects like fog or smoke**.
- iii) It also finds use in **industrial cleaning processes like dry ice blasting**.

4. Hazardous nature:

a. Dry ice can be **hazardous** if ingested because dry ice sublimates rapidly and when it comes in contact with moisture in the mouth or digestive tract it releases CO₂ gas which could pose a danger of breathlessness (hypercapnia).

b. It may also cause burns, bloating, vomiting, and even life-threatening complications like stomach or intestinal perforation.

Frontier Technology Labs (FTLs)

Why in the News?

Atal Innovation Mission (AIM) under NITI Aayog and **Meta** have collaborated to set up Frontier Technology Labs (FTLs) **in schools deemed strategically important**.

This partnership aims to make **frontier technologies** accessible to everyone and encourage innovation among students.

What are Frontier Technology Labs (FTLs)?



Source- India Today

1. About:

- a. The FTL is an **advanced version of the Atal Tinkering Lab**, featuring cutting-edge infrastructure that **includes all elements found within the Tinkering Lab**.
- b. It **enables students to innovate using technologies** such as **Artificial Intelligence**, Augmented & Virtual Reality, **Blockchain**, Cybersecurity, **Robotics**, 3D Printing, and Internet of Things.

2. Component of Meta's Education to Entrepreneurship initiative– The FTLs are a component of **Meta's Education to Entrepreneurship program**, which started in September 2023. This initiative aims to connect students, youth, workers, and micro-entrepreneurs with advanced technologies, bringing digital skills to the grassroots level.

3. Funding– **Meta** will finance the FTLs

4. Knowledge Partner– **Atal Innovation Mission**

What are frontier technologies?

1. About– It is defined as potentially disruptive technology that can **address large-scale challenges**. It is an intersection where radical forward-thinking and real-world implementation meet.

2. Examples– AI, robotics, 3D printing, Internet of Things among other

Penicillin G manufacturing to restart in India

Why in the news?

India has decided to resume the manufacturing of the common antibiotic Penicillin G after nearly 3 decades.

About Penicillin G



1) It is a medication used to manage and treat a wide range of infections. This is very effective against **gram-positive and gram-negative** cocci bacterial infections. For Ex- Susceptible bacterial infections in the stomach.

2) It is the **active pharmaceutical ingredient (API)** used in manufacturing several common antibiotics.

About Active Pharmaceutical Ingredients

Description– These are the active ingredients contained in a medicine. It is that part of the medicine that produces the **intended therapeutic effects**. For example, in a painkiller, the active ingredient relieves pain.

Quantity– A **Small amount** of the API is required to produce the effect, and so the medicine contains only the required amount of the API.

Largest production– **China** is one of the largest producers of Key Starting Material (KSM) and APIs in the world.

Why did penicillin manufacturing stop in India?

- 1) It was phased out of production because of **subsidy-driven cheaper Chinese** products flooding the market.
- 2) **The Drug Prices Control Order** ensured that more companies went for cheaper imported products. The Drug Prices Control Order regulates the price of essential medicines in India.

ISRO to Provide Internet Services in 80 Remote Tribal Villages

What is the News?

The Ministry of Tribal Affairs is planning to collaborate with ISRO to deploy V-SAT stations on a pilot basis for around 80 tribal villages to bring internet services to these geographically remote and challenging areas that have long been without connectivity.

About V-SAT

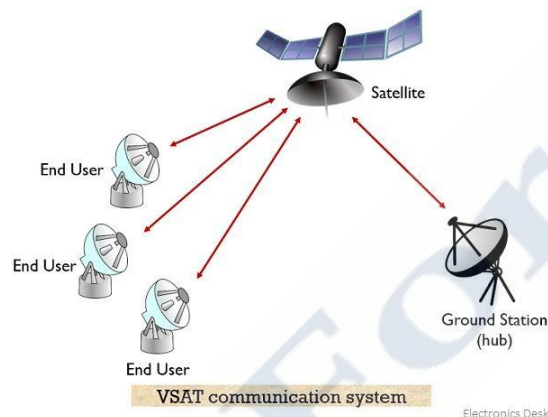


Figure 8. Source- electronicsdesk.com

1. About: A Very Small Aperture Terminal (VSAT) is a **two-way satellite ground station** equipped with a dish antenna ranges from **75 cm to 1.2 meters**.

2. Functionality:

i) VSATs facilitate **two-way communication via satellite**. They relay data between small remote Earth stations (terminals) and other terminals (in mesh topology) or central Earth station “hubs” (in star topology).

ii) VSATs **handle both narrowband data and broadband data**.

Ex-Narrowband data: Credit card transactions, polling, RFID data, or SCADA

Ex-Broadband data: Satellite Internet access, VoIP, or video

3. Applications: They find use in **providing connectivity** to remote locations, supporting transportable or on-the-move communications (using phased array antennas), and enabling mobile maritime communication.

4. Advantages: In the realm of modern telecommunications, VSATs offers a number of advantages:

i) No physical network needed: VSATs **rely on satellite signals** instead of physical links like Ethernet cables, reducing the risk of structural issues and eliminating the need for extensive infrastructure.

ii) Independent operation: VSAT systems can **operate independently for local telecommunication networks**, serving as a backup for wired networks in case of failure.

iii) **Easy deployment:** VSATs can be **installed in remote locations with minimal infrastructure requirements**, as satellite signals can be redirected to various locations through a central hub.

5. Disadvantages: It has few disadvantages:

i) **Latency:** VSATs **suffer from latency** due to the time delay in signals traveling between space and the ground, especially noticeable in two-way communication.

ii) **Signal quality changes:** Weather conditions and obstructions like buildings or trees **can cause signal distortion** between the satellite and earth station.

Subject: Environment

Report on Status of Leopard in India

Why in the News?

Recently, the Environment Ministry, in collaboration with the **National Tiger Conservation Authority (NTCA)** and the **Wildlife Institute of India (WII)**, unveiled the fifth cycle of leopard population estimation in India.

Key findings of the Fifth cycle of leopard population estimation in India



Figure 9. Source- PIB

1. Population Estimate:

a. India's leopard population is **estimated at 13,874**, showing stability compared to the previous count. The numbers **rose by 8%** from **12,852 in 2018** to 13,874 in 2022.

b. However, **this only covers 70% of leopard habitat**, with the **Himalayas** and **semi-arid regions not included in the survey**.

2. Region-wise Trends– In Central India, the leopard population remains stable or shows slight growth,

whereas in the **Shivalik hills** and **Gangetic plains**, there is a **decline in population**.

3. State-wise distribution:

a. The highest number of leopards were reported in **Madhya Pradesh (3,907)**, followed by **Maharashtra (1,985)**, Karnataka (1,879) and Tamil Nadu (1,070).

b. The tiger reserves or locations with the highest leopard populations include **Nagarajunasagar Srisailem** in Andhra Pradesh, **followed by Panna** and Satpura in Madhya Pradesh.

4. Survey Methodology– The study targeted forested habitats **across 18 states** with tiger populations, employing foot surveys and camera traps. It captured over 4,70,81,881 photographs, resulting in 85,488 images of leopards.

Melanochlamys droupadi: Sea slug named after President Murmu

Why in the News?

The Zoological Survey of India (ZSI) has announced the discovery of a new marine species of head-shield sea slug. It has been named as *Melanochlamys droupadi* after the President of India, Droupadi Murmu.

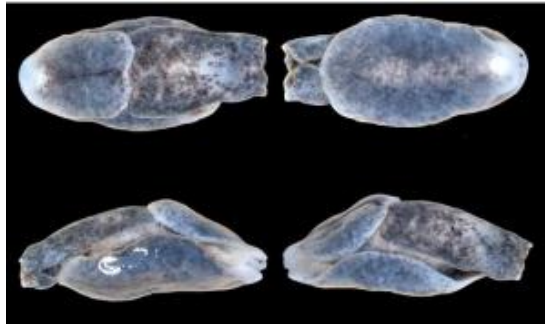


Figure 10. Source- The Hindu

About *Melanochlamys droupadi*

1. Place of Discovery– It was discovered from **Digha of West Bengal coast** and **Udaipur of Odisha coast**.

2. Distinct Feature– It is characterized by a **short, blunt and cylindrical body** and a smooth dorsal surface with two dorsal equal or unequal shield.

3. Physical attributes:

a. It's a tiny **brownish-black invertebrate**, measuring up to **7 mm long**, with a **ruby red spot** at its rear.

b. It has a shell inside its body, and is a **hermaphrodite**

(organisms possess both male and female reproductive organs).

4. Reproduction– They reproduce **between November and January**.

5. Habitat– These species are typically **found along the intertidal zone**, leaving crawl marks on sandy beaches.

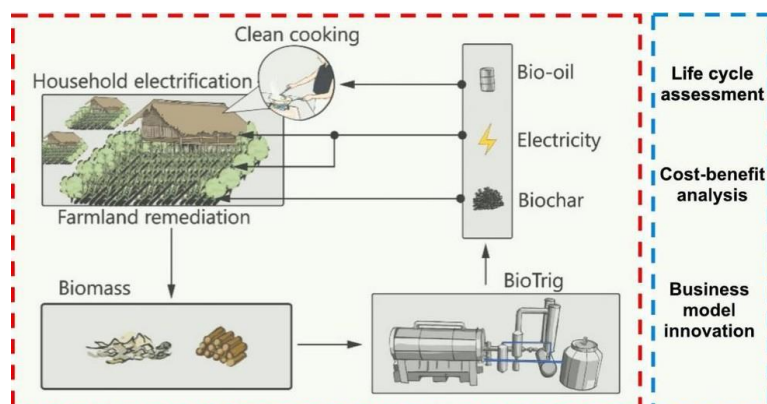
6. Distribution– Species of the genus *Melanochlamys* are **primarily found in temperate regions of the Indo-Pacific Ocean**, but **three species are truly tropical**: *Melanochlamys papillata* from the Gulf of Thailand, *Melanochlamys bengalensis* from West Bengal and Odisha coasts, and the current species (*Melanochlamys droupadi*).

BioTRIG- New waste management technology

Why in the News?

A recent study has claimed that BioTRIG, a new waste management technology, could help rural Indians.

About Biotrig



Source- Down to Earth

1. **About:** It is a **new waste management technology** which works on the **pyrolysis system**.

Note: **Pyrolysis** is a kind of chemical recycling that turns leftover organic materials into their component molecules.

2. **How it works:** Waste is sealed inside an **oxygen-free chamber**. The sealed waste is then **heated above 400 degrees Celsius**. During this process, **useful chemicals** are produced.

3. BioTRIG generates three valuable products: **Bio-oil, Syngas and Biochar fertilizer**.

4) **Significance:**

a) **The bio-oil** is a **clean-burning alternative** to dirty cooking fuels in homes.

b) **The syngas and bio-oil** facilitates **heating and powers the pyrolysis system**, and surplus electricity is utilised to power supply to local homes and businesses,

c) **Biochar** improves **soil fertility and helps store carbon**.

d) The BioTRIG system could help to **reduce greenhouse gas emissions** from communities by nearly 350 kg of CO₂-eq per capita per annum.

Amrabad Tiger Reserve

Why in the News?

Recently, it was found that the **Amrabad Tiger Reserve (ATR)** is facing challenges such as understaffing and financial constraints.

About Amrabad Tiger Reserve (ATR)

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RICH IN FLORA AND FAUNA

- > Over 80 species of mammals identified in ATR
- > Large carnivores such as tiger, leopard, wild dog, and Indian wolf, Indian fox
- > Omnivores such as sloth bear, honey badger, wild boar
- > Herbivores such as chinkara, nilgai, blackbuck, four-horned antelope
- > Over 303 bird species – eagles, pigeons, doves, cuckoos, woodpeckers, drongos, bulbuls stay here
- > Those wanting to book the package can do it directly through the official website of Amrabad Tiger Reserve
- > Officials said the pricing of the package is comparatively low compared to other reserves in the country

Source- Times of India

Aspect	Details
About	1. This Tiger Reserve (ATR) is one of the largest tiger reserves in India. 2. Amrabad is the second-largest Tiger Reserve in terms of core area . 3. It is also the sixth largest in terms of total area among 51 Tiger Reserves in India.
Location	It is located in the Nagarkurnool and Nalgonda districts in the southern part of Telangana .
History	The reserve was notified as a sanctuary in the year 1983.
Distinct feature	1. Amrabad Tiger Reserve Forest is home to the largest number of Tigers in Telangana State . 2. The hilly terrain of this Tiger Reserve, with deep valleys and gorges, forms the catchment of the Krishna River .
Flora	1. Dense grass occurs in 30% of the area and scattered in an additional 20%. 2. Dominant tree species include <i>Terminalia tomentosa</i> , <i>Hardwickia binata</i> , <i>Madhuca latifolia</i> , <i>Diospyros melanoxylon</i> , <i>Gardenia latifolia</i> , <i>Anogeissus latifolia</i> , <i>Chloroxylon swietenia</i> , <i>Terminalia</i> spp.
Fauna	1. Major wild animals found are Tiger, Leopard, Wild dog, Indian Wolf, Indian fox, Rusty-spotted cat, Small Indian civet, Sloth bear, Honeybadger, Wild boar etc. 2. Over 303 bird species have been identified in this region. Some important groups include Eagles, Pigeons, Doves, Cuckoos, Woodpeckers, Drongos etc

Begonia Narahari

Why in the News?

A new flowering plant species named Begonia Narahari was recently **discovered by researchers** in **Arunachal Pradesh**.

About Begonia Narahari



Figure 11. Source- bnn

1. Discovery and Identification:

- a. It is a newly discovered **flowering plant species** belonging to the **Begonia genus** within the Begoniaceae family.
- b. The species, named 'Narahari,' is a **tribute to Prof. Garikapati Narahari Sastry** for his contributions to the well-being of the region and the establishment of the **Germplasm Conservation Centre** for the bio-resources of Northeast India.

2. Characteristics:

- a. Begonia Narahari is **known for its vibrant blue iridescence** when exposed to direct light, a unique characteristic that helps distinguish it from related species during identification.
- b. Currently, Begonia naraharii is **only found** in the Demwe area within the **Lohit district of Arunachal Pradesh**.

3. Conservation Status:

- a. Due to limited information about its global population, the species is **temporarily labeled as Data Deficient (DD)** per the **IUCN** species assessment guidelines.
- b. The limited habitat and possible threats like agricultural expansion, fires, and timber extraction highlight the importance of focused conservation efforts.

Subject: Schemes & Programmes

Holistic Progress Card (HPC)

Why in the News?

PARAKH, a **standard-setting body under NCERT**, has introduced a new Holistic Progress Card (HPC). HPC includes feedback from parents, peers, and self-assessment by students to monitor their holistic development regularly.

What are the key features of the Holistic Progress Card (HPC)?

Objective– Traditionally, schools focused on year-end exams, with teachers solely responsible for assessment. The HPC, aligning with **National Curriculum Framework for School Education (NCFSE)** guidelines, aims for a **learner-centered evaluation**.

WHAT IS HOLISTIC PROGRESS CARD

- New form of student evaluation based on recommendations of NEP 2020

- Doesn't depend on marks or grades to evaluate a student's academic performance

- Instead, it gives greater role to parents in tracking a student's achievements in class



- Students' own perception of their performance and what they wish to achieve in school included for the first time

Source- The Indian Express

Key features:

1. Classes involved-The HPC was created for the **foundational stage** (Classes 1 and 2), **preparatory stage** (Classes 3 to 5), and **middle stage** (Classes 6 to 8). Efforts are currently underway to develop a similar framework for the secondary stage.

2. Parameters of evaluation- At every stage, **besides academics**, students are evaluated on **self-awareness, relationships, problem-solving, emotional intelligence**, and **creativity**. After each activity, students reflect on their progress by circling statements like "I learned something new," "I expressed creativity," or "I helped others."

3. Method of evaluation:

a. Self assessment- Self assessment is included in the HPC **for all students from Class 1 to Class 8**. In middle school (Classes 6 to 8), students are prompted to set academic and personal goals with specific timelines at the start of the year.

The **middle stage HPC** also involves an "**ambition card**" where students list their goals for the year and areas for improvement, as well as the skills and habits needed to achieve them.

b. Parents involvement-The HPC will connect home and school by involving parents in their child's learning. Parents will provide feedback on homework completion, classroom engagement, and the child's ability to balance screen time with extracurricular activities at home.

c. Peer evaluation- The new assessment method also values peer evaluation. After each classroom activity, **students must indicate whether their classmates effectively participated in learning and engagement**.

Note- PARAKH urged all States to implement the HPC by adjusting it to suit their specific needs. **States can also translate the HPC into regional languages** as needed.

ADITI scheme

Why in the news?

Recently, the Acing Development of Innovative Technologies with iDEX (ADITI) scheme was launched by Department of Defence Production.



Source- Firstpost

About Acing Development of Innovative Technologies with iDEX (ADITI)

Aspect	Details
Description	1. The Department of Defence Production launched the ADITI scheme during the annual Defence Innovation Event – DefConnect 2024 held in New Delhi.
Objective	To create an ecosystem for fostering innovation and technology development in defence and aerospace by engaging industries, startups and academia.
Concerned Ministry	Department of Defence Production
Funding	Rs 750 crore
Salient features	<ol style="list-style-type: none"> ADITI specifically focuses on promoting innovations in critical and strategic defence technologies such as ammunition and explosives, armaments, aerospace, surveillance, sensors, propulsion, artificial intelligence and other future technologies. It aims to develop about 30 deep-tech critical and strategic technologies in the proposed timeframe. Technology Watch Tool aims to bridge gap between armed forces' requirements and innovation ecosystem capabilities
Benefits	<p>The ADITI scheme is expected to provide major benefits to the defence sector in multiple ways:</p> <ol style="list-style-type: none"> The scheme will reduce import dependence in critical technologies and help India to be self-reliant. The development of advanced technologies will boost defence capabilities and preparedness. The collaboration between industry, academia and armed forces will lead to knowledge enhancement. The scheme will stimulate technology innovation, manufacturing and job creation.

e-Kisan Upaj Nidhi

Why in the news?



Figure 12.Souce- Krishi Jagran

Recently, the union Minister for Consumer Affairs, Food & Public Distribution, Commerce and Industry and Textiles launched 'e-Kisan Upaj Nidhi' (Digital Gateway).

What is 'e-Kisan Upaj Nidhi'?

Aspect	Details
About	It is a digital gateway of Warehousing Development and Regulatory Authority (WDRA).
Objective	To ease the farmers' warehousing logistics and aid the farmers in receiving fair prices for their produce .
Nodal ministry	It is an initiative of the Department of Consumer Affairs, Ministry of Consumer Affairs, Food, and Public Distribution and Commerce and Industry and Textiles
Salient features	1) E-Kisan Upaj Nidhi' platform with its simplified digital process can ease the procedure of farmers' storage at any registered WDRA warehouse for a period of 6 months at 7% interest per annum. 2) It will integrate e-Kisan Upaj Nidhi and e-NAM to enables farmers to leverage interconnected markets, extending benefits beyond government Minimum Support Price (MSP) .
Significance	This initiative with no collateral, extra security deposit policy aims to prevent distress sales by farmers , enabling better post-harvest storage opportunities.

Subject: Geography & Places in News

Burkina Faso

Why in the News?

As per a report, 170 people were executed in an attack on 3 villages namely **Komsilga, Nodin** and **Soroe** in **Yatenga province** in **Burkina Faso**.

About Burkina Faso

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Source- BBC

Location	<ol style="list-style-type: none">1. Burkina Faso lies between the Sahara desert to the north and the Gulf of Guinea to the south.2. It is situated south of the loop of the Niger River.
Neighbours	<ol style="list-style-type: none">1. Burkina Faso shares borders with six neighbouring countries: Benin, Ivory Coast, Ghana, Mali, Niger, Togo.2. It has no coastline or maritime claims.
Capital	Ouagadougou
Terrain	<ol style="list-style-type: none">1. Most of central Burkina Faso is a savanna plateau.2. The plateau features fields, brush, and scattered trees.3. The highest peak in Burkina Faso is Ténakourou.
Language	<ol style="list-style-type: none">1. Burkina Faso is a multilingual country.2. It boasts a rich linguistic tapestry with approximately 70 languages spoken, of which about 66 are indigenous.
Religion	Majority of the people in Burkina faso follow Islam .
International Affiliation	<ol style="list-style-type: none">1. Burkina Faso enjoys good relations with the European Union.2. Burkina Faso is a member of the ICC and has a bilateral immunity agreement with the United States military, as covered under Article 98.
Distant features	<ol style="list-style-type: none">1. Burkina Faso is home to several game preserves, including Arly, Nazinga, and W National Park.2. These preserves harbor diverse wildlife, including lions, elephants, hippopotamuses, monkeys, common warthogs, and antelopes.3. The endangered painted hunting dog (<i>Lycaon pictus</i>) was once found in Burkina Faso but is now considered extirpated.

Agalega Atoll (Mauritius)

Why in the News?

Recently, Prime Minister Narendra Modi and Prime Minister Pravind Jugnauth of Mauritius jointly inaugurated an airstrip and a jetty that India has built on Agalega atoll.

About Agalega Atoll (Mauritius)

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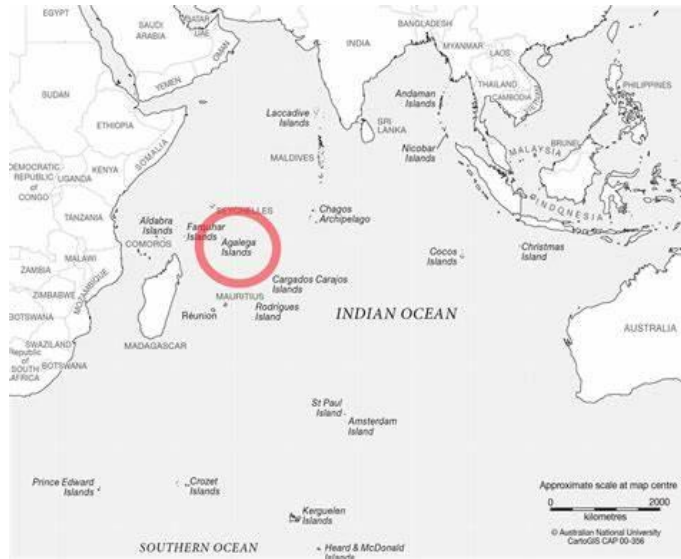


Figure 13. Source- greatgameindia

1. Agalega is a tiny atoll in the **Western Indian Ocean**.
2. This atoll comprising two islands, **North and South Agalega**, separated by a short channel.
3. This atoll, located 684 miles (1,122 km) northeast of mainland Mauritius
4. The only town on the island is called **Vingt-Cinq** which means 25 in French, referring to the number of lashes the slaves would receive as punishment.
5. The 12 km-long and 2 km-wide northern island has a small airstrip which used to be occasionally visited by Coast Guard planes and helicopters.
6. Agalega is known for its production of **coconuts** and is also home to the **Agalega day gecko**.

INS Jatayu: India's new naval base in Lakshadweep

Why in the News?

The Indian Navy will officially commission Naval Detachment Minicoy as INS Jatayu on March 6, 2024.

What is INS Jatayu?

1. About:

- a. INS Jatayu is the **second Naval base in Lakshadweep** after **INS Dweep** in **Kavaratti**, which was commissioned in 2012.
 - b. The **existing Naval Detachment Minicoy**, which is under the operational command of the Naval Officer-in-Charge (Lakshadweep), **will be commissioned as INS Jatayu**.
- Note**– Naval Detachment Minicoy was set up in the 1980s.

2. Facilities– A naval detachment provides administrative, logistics, and medical support. INS Jatayu will become a naval base with more facilities like an **airfield, housing**, and personnel once it gets the necessary clearances.

What is its Significance?

1. Strategic location– The establishment of INS Jatayu enhances Navy surveillance and operations. **Situated on Lakshadweep's southernmost island, Minicoy**, overlooks vital Sea Lines of Communication (SLOCs) in the Arabian Sea. It **provides a strategic vantage point for monitoring maritime traffic**.

Note– **Sea Lines of Communication (SLOCs)**– It refers to the main maritime routes between ports, essential for trade, logistics, and naval activities.

2. Maritime Security and Operational Range- The commissioning of INS Jatayu broadens the Navy's operational range, **enhancing anti-piracy and anti-narcotics efforts in the Western Arabian Sea**. It underscores India's commitment to maritime security in a vital area for global trade and energy supplies.

3. Geopolitical dynamics- Given the changing geopolitical landscape, especially China's growing influence in the Indian Ocean region, the establishment assumes greater significance.

About the Lakshadweep Islands



Figure 14. Source- Royal Maldives family

1. Lakshadweep archipelago **consists of 36 islands** situated between 220 km and 440 km from Kochi. **Only 11 of these islands are inhabited**, covering a total area of just 32 sq km.
2. The Lakshadweep islands are **part of a series of coral islands in the Indian Ocean**, stretching southward to the Maldives and the Chagos archipelago beyond the equator.
3. Minicoy, the southernmost island of Lakshadweep, lies along crucial Sea Lines of Communication (SLOCs), the main global maritime pathways. These include the **Eight Degree Channel (between Minicoy and Maldives)** and the **Nine Degree Channel (between Minicoy and the main Lakshadweep islands)**.

India's first underwater Metro line

Why in the News?

Prime Minister Narendra Modi recently inaugurated India's first underwater metro line in Kolkata.



Figure 15. Source- The Indian Express

About India's first Underwater Metro line

1. **About-** This underwater Metro line is a **part of the Howrah Maidan-Esplanade section of Kolkata Metro's East-West corridor**.
2. **Length of the section-** Howrah Maidan-Esplanade section is 4.8 km long and goes under the **Hooghly River** through **India's first underwater transportation tunnel**.
3. **Tunnel specification-** The tunnel is 13 meters below the riverbed and **33 meters below ground level**. Its **total**

length is 520 meters.

4. Connecting Places– This section connects **Kolkata** and **Howrah**, located on the east and west banks of the Hooghly River, respectively.

5. Deepest metro Station–This section will also have the distinction of having the deepest metro station in India at Howrah, which is 30 meters deep.

History of Kolkata Metro

1. About–It is **India's first rapid transit system**, serving Kolkata and the wider Kolkata Metropolitan Region in West Bengal.

2. Started & Current Status– It was first **operationalized in 1984**. As of January 2023, it is the **second busiest** and **fourth longest metro network** in India.



Figure 16.Source- TimesofIndia

Key facts about Hooghly River

1. About– The Hooghly River, **also called the Bhagirathi-Hoogly** and **Kati-Ganga River**, is a major river in West Bengal.

2. Length– It is a **branch of the Ganges River**, spanning approximately **260 kilometers**.

3. Course:

a. It **originates in Murshidabad**, where the Ganga River divides into two branches.

b. The branch that flows through Bangladesh is known as the **Padma**, while the other branch, the Hooghly,

flows through a densely industrialized region of West Bengal.

4. Rivers drain into Hooghly– Ajay, Falgu, Jalangi and Churni to the north and Rupnarayan, Mayurakshi, Damodar and Haldi to the south.

5. Important cities near it– Jiaganj, Azimganj, Murshidabad, and Baharampur.

Desert star dunes

What is the News?

Scientists unveiled the first in-depth study of star dunes, revealing the internal structure of these geological features.

About Sand Dunes



Figure 17.Source- LotusArise

1. About: Star dunes are the **tallest and most complex** type of desert sand formations.

They reach **hundreds of meters in height** and are characterized by their **pyramidal forms and radiating arms**.

Star dunes are **pyramid-shaped sand formations** with arms stretching out from a

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central peak. This gave them a **star-like appearance** when viewed from above.

2. **Locations:** Star dunes comprise about **10% of desert dunes** on Earth. These dunes are found in various deserts across the globe, including the sand seas of **Africa, Arabia, China, Saudi Arabia, North America, and even on Mars and Saturn's moon Titan.**

Findings of the study

- i) The study focused upon a star dune named **Lala Lallia in eastern Morocco**, located within the Sahara Desert.
- ii) Researchers utilized **ground-penetrating radar and luminescence dating** to estimate the formation time of Lala Lallia, relying on energy trapped within sand grains.
- iii) The findings suggest that Lala Lallia took approximately **900 years to form**, accumulating approximately **6,400 metric tons of sand** annually as wind carries it across the desert.