UPSC Daily Current Affairs| Prelim Bits 17-05-2025

Relevance of NOTA in Uncontested Elections

***Prelims**: Indian Polity and Governance | Political System*

Why in News?

Recently, the Vidhi Centre for Legal Policy filed a Public Interest Litigation (PIL) for including NOTA as an option compulsorily in every election, even if there is only one single candidate.

> ***None of the Above (NOTA)** was introduced in 2013 on the PIL filed by the People's Union for Civil Liberties which sought a mechanism to "recognise the right of a voter not to vote, but still the secrecy of his having not voted is not maintained in its implementation..."*

- **Issues in uncontested elections** – *Not holding an election* in a constituency because there is only 1 candidate is a challenge.
- It would mean *denying voters the chance of expressing their opinion* (through NOTA) against that single candidate who will anyhow get elected unopposed.
- **Argument against mandating NOTA** – The *Election Commission (EC) is completely opposed* to the idea of making NOTA a compulsory option in all constituencies.
- EC has stated that, NOTA has not brought in the desired results as *not many voters have opted for NOTA in past elections*.
    - Only little more than 1% of voters, voted for NOTA in the 3 Lok Sabha elections (2014, 2019 & 2024) held since 2013.

> ***NOTA's weightage** was slightly higher in the very 1st election held in the State after NOTA was introduced but declined in subsequent elections, although the trend is not linear.*

- The relevance of uncontested elections is lesser in India
    - In all the Lok Sabha elections held since 1971, there have been *only 6 uncontested elections*.
    - Since 1952, there have been *only 9 cases of candidates getting elected unopposed.*
- Treating NOTA as mandate in all direct uncontested elections does *not find a place in the statues* and same would require legislative amendments in the provisions of
    - Representation of the People Act 1951 and in the

    - Conduct of Election Rules 1961
- **Arguments in favour of mandating NOTA** - It is a way through which our electoral system can become more responsive to people.
- There are many State assembly elections where little more than 1% opted for NOTA over the last decade.
    - For instance, the *highest being in Bihar with 2.48%* during the 2015 Assembly election, followed by Gujarat with 1.8% during the 2017 Assembly elections.
- **Way forward** - *Minimum % of votes to be polled* by the candidate can be fixed as a benchmark for getting elected depending upon the size of the constituency.
- *Legitimacy to NOTA votes and voters* can be given, by making a provision for re-election if certain % of voters opt for NOTA in an election.

Reference

The Hindu| Relevance of NOTA in Uncontested Elections

Integrated Air Command and Control System (IACCS)

***Prelims**: Current events of national and international importance.*

Why in News?

Recently, At the media briefing on Operation Sindoor, military officers displayed a picture of the Integrated Air Command and Control System (IACCS) node of the Indian Air Force (IAF).

- It is an *automated command and control system*.
- **Developed by** - Bharat Electronics Limited (BEL), the public sector aerospace and defence electronics company.
- **Objectives** – To ***integrate data from all air defence assets***, including ground-based radar, airborne sensors, civilian radar, communication nodes, and the various command and control centres of the IAF.
- **Importance** - Consolidated dataset along with real-time updates, provides a comprehensive picture and overall *situational awareness during air operations*.
- The total battlefield picture *enables central control and decentralised execution* at various levels.
- By *reducing reaction time*, it allows military commanders to make early decisions on identification and assessment of threats, and to direct air defence assets to carry out kills.
- It helps in effective airspace management and reduces redundancy.
- It will help achieve the critical integration of all air defence assets to *ensure coordinated responses* from air defence platforms across the 3 Services.

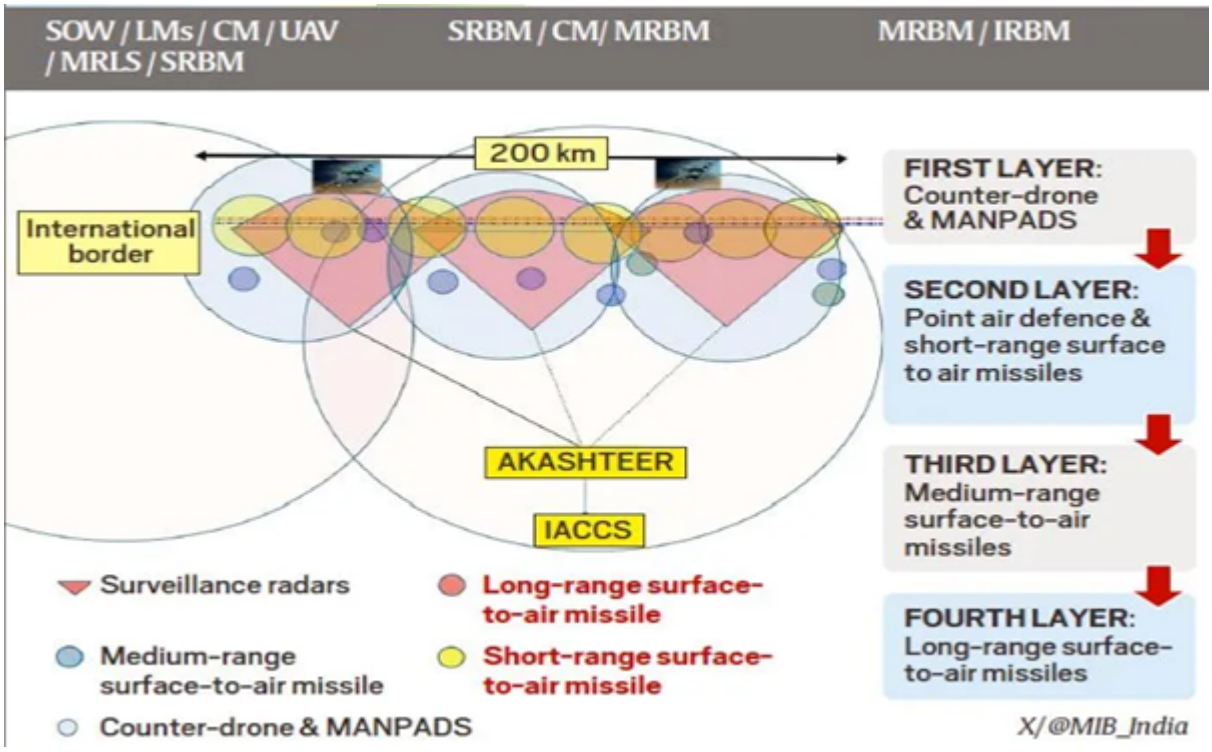
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• It is an *air defence control and reporting system* that connects the units of its air defence.
• **Developed by** – BEL.
• **Role** – It would enable the *monitoring of low-level airspace* over battle areas, and effectively control ground-based air defence weapon systems.
• It operates at a comparatively small scale at present.
• It is in the *process of being integrated with IACCS* for effective coordination between the Army and Air Force air defence operations.

Multi-layered Deployment of Air Defence Assets

> ***Air defence systems*** *use a complex system of radar, control centres, defensive fighter jets, and ground-based air defence missile, artillery, and electronic warfare systems to neutralise a range of threats from the sky, including enemy aircraft, drones, and missiles.*

- **Point defence** – It comprises low-level air defence guns and shoulder-fired weapons.
- **Area defence** - It comprises fighter aircraft and long-range missiles.
- **Air defence grid** – It comprises a range of surveillance radar.
- There are ***4-layer air defence umbrella*** in Indian military system.



Reference

The Indian Express| Air Defence Shield of Indian Military System

Related News – Air Defence Systems

Right to Repair

***Prelims**: Current events of national and international importance| Sustainable development*

Why in news?

Recently, the Department of Consumer Affairs (DoCA) received a report for a Framework on Repairability Index (RI) in Mobile and Electronic Sector.

- **The right to repair** – It refers to empowerment of consumers to have control over the reparability of a consumer goods.
- It allows end users, consumers as well as businesses, to repair devices they own or service without any manufacturer or technical restrictions.
- **Origin** - It originated in United States, where Motor Vehicle Owners' Right to Repair Act of 2012 compelled manufacturers to release information that needed to repair vehicles.
- **Significance** – It enables Democratization of repairability of consumer goods.
- It reduces the E – waste by promoting sustainable use of electronic goods.
- It promotes e-waste recycling and creating a *circular economy* for parts and metals.
- It increases accountability on manufacturers to provoide quality products.
- **Repairability Index (RI)** – It was developed by Department of Consumer Affairs.
- The RI will categories electronic products based on criteria including,
    - Availability of spare parts
    - Cost of repair
    - Software updates
    - Availability of information

Right to Repair Portal in India
• The Department of Consumer Affairs (DoCA) launched the Right to Repair Portal India in 2024. • The Right to Repair Portal provoide: - Access to product manuals and repair videos - Information on spare parts pricing and warranty - Clarification on guarantee, warranty, and extended warranty - Details of service centers across India - Recognition of third-party repairers - Country of origin information

Reference

The Hindu| Right to Repair in India

High-Pressure Polymeric Membrane for Sea Water Desalination

***Prelims**: Current events of national and international importance| General science*

Why in news?

Recently Defence Research & Development Organisation (DRDO) has successfully developed an indigenous nano porous multi-layered polymeric membrane for high-pressure seawater desalination.

- **Desalination** - It is the process of removing dissolved salts and other impurities from saline water to produce fresh, drinkable water suitable for human consumption, agriculture, or industrial use.
- **Types**
  - **Reverse Osmosis (RO)** – Membrane-based filtration.
  - **Thermal Desalination** – Heating saline water to produce water vapor, which is then condensed to obtain fresh water.

Reverse Osmosis (RO) is a membrane-based water purification process in which saline water is forced through semi-permeable membranes under high pressure, allowing only water molecules to pass through while blocking dissolved salts, minerals, and impurities.

- **High-Pressure Polymeric Membrane -** This membrane is designed for use in high-pressure seawater desalination, aimed particularly at meeting the needs of the Indian Coast Guard (ICG).
- **Features** – The Nanoporous architecture increases surface area and selectivity.
- Multi-layered design offers improved mechanical strength, salt rejection, and chemical resistance.
- **Improved stability** – The membrane addresses a key operational challenge that is the ***instability of conventional membranes*** when exposed to chloride ions in saline water.
- The polymeric membrane is engineered to withstand high pressure and chloride-rich conditions, making it suitable for deep sea desalination systems.
- **Developed by** – Defence Materials Stores and Research & Development Establishment (DMSRDE), a Kanpur-based DRDO laboratory.
- It is currently under testing and trials in the existing desalination plant.
- **Strategic Utility** – it enhances self-reliance (Aatmanirbhar Bharat) in maritime technologies, reducing dependence on imported desalination systems.
- **Defense Capability** – It strengthens the operational sustainability of Indian Coast Guard ships during long missions.
- It can support coastal desalination needs, helping address water scarcity.
- **Technological Milestone** – It demonstrates India's growing expertise in advanced polymer and membrane technology within a short R&D cycle.

Reference

PIB| High-Pressure Polymeric Membrane

Carbon Capture and Utilisation Testbeds

***Prelims**: Current events of national and international importance| Environmental issues*

Why in news?

Recently Central Government has approved setting up five carbon capture and utilisation (CCU) testbeds in the cement sector.

- **Carbon Capture and Utilisation (CCU) testbeds** – It aims is to develop and demonstrate net zero decarbonisation pathways using CCU technologies.

  Carbon Capture and Utilisation (CCU) is a process where carbon dioxide (CO2) emissions are captured from sources like power plants or industrial facilities and then used in various applications instead of being released into the atmosphere.

- **Initiative by** - Ministry of Science & Technology under a PPP (Public-Private Partnership) model.
- **CCU Applications** - Captured CO_2 will be converted into value-added products like:
  - Synthetic fuels
  - Urea
  - Soda ash
  - Food-grade CO_2
  - Chemicals
  - Concrete aggregates

Significance

- **Accelerates Net Zero Goals** – It supports India's 2070 carbon neutrality target and Paris Agreement commitments.
- It also supports India's Nationally Determined Contribution (NDC) under Paris Agreement.
- **Industrial Decarbonisation** – It enables clean tech transition in hard-to-abate sectors like cement, steel, and power.
- **Trade Competitiveness** – It prepares Indian industry for EU's Carbon Border Adjustment Mechanism (CBAM) by lowering carbon footprint.
- **Boosts Innovation** – It fosters academia-industry R&D collaboration in cutting-edge carbon capture and utilisation technologies.
- **Promotes Aatmanirbhar Bharat** – It reduces dependence on imported clean-tech solutions; promotes indigenous tech development.

Reference

Times of India| Carbon Capture and Utilisation Testbeds

One Liners 17-05-2025

History, Art and Culture

Sikkim's Integration into India (1975)

Sikkim officially became a state of India on May 16, 1975

• **Capital** - Gangtok.

• **Protectorate Status -** Sikkim was an Indian protectorate following a 1950 treaty, after periods of influence from neighbors and British rule.

• **Growing Tensions -** The 1970s saw rising demands for democratic reforms within the Sikkimese kingdom.

• **Crucial Referendum -** In 1975, a referendum resulted in a large majority voting for a merger with India.

• **Parliamentary Action -** The Indian Parliament subsequently passed a constitutional amendment to facilitate the integration.

• **Statehood Achieved -** In May 1975, Sikkim officially became the 22nd state of the Indian Union.

• **End of Monarchy -** This marked the end of the Chogyal monarchy and Sikkim's full integration into India, a topic of ongoing discussion.

International Relations and Issues

International Day of Light

Annually on May 16th, the International Day of Light, established by UNESCO in 2017.

• **Aims** - Recognizes light's vital role across science, culture, and development.

• **Laser's Legacy -** The date marks the first successful laser operation in 1960, highlighting how scientific breakthroughs in light technology benefit society.

• **Theme 2025 -** This year's theme, "Light, Innovation, Society," emphasizes how light-based innovations enhance our lives and drive progress in diverse fields.

• **Global Significance -** The day raises awareness about light's importance in areas like healthcare, communication, art, and sustainable energy, fostering global scientific collaboration.

• **Driving Innovation -** It underscores light's crucial role in education and inspires future advancements in optics and photonics.

• **Connecting Worlds -** Today's observance celebrates light's power and its profound impact on our understanding and societal progress worldwide.

International Atomic Energy Agency (IAEA)

Following media reports of a potential incident at Pakistan's Kirana Hills amid India's Operation Sindoor, the IAEA confirmed no radiation leak occurred from any Pakistani nuclear facility.

• **About IAEA** - Is the UN's global nuclear watchdog, headquartered in Vienna, promoting the safe, secure, and peaceful use of nuclear technology ("Atoms for Peace and Development").

• **Establishment** - In 1956 and came into force in 1957, established post-WWII to prevent nuclear proliferation and foster peaceful nuclear cooperation among its 178 member states (as of 2025).

• **Key Functions** - Core roles include nuclear safeguards verification, managing nuclear emergencies via its IEC, capacity building for peaceful uses, setting safety standards, and facilitating international R&D.

• **Monitoring Role** - The agency regularly monitors and reports on nuclear activities to the UN General Assembly and Security Council, ensuring transparency and international oversight.

• **Reassurance** - The IAEA's confirmation provides reassurance regarding the safety and security of nuclear facilities in the region following recent geopolitical tensions.

Economy

Coal Gasification Push with New Agreements

The Coal Ministry has signed Coal Gasification Plant Development and Production Agreements (CGPDPA) with Jindal Steel, New Era Cleantech, and Greta Energy under the Coal Gasification Financial Incentive Scheme.

• **Coal Gasification -** This thermo-chemical process converts coal into synthesis gas (syngas), a mixture of CO, H_2, CO_2, CH_4, and H_2O, through high-temperature reactions with limited oxygen and steam.

• **Gasification Process -** It involves coal preparation (crushing), reaction in a high-temperature gasifier with steam and oxygen, chemical breakdown into syngas, and subsequent gas cleaning.

• **Financial Incentive Scheme:** -Launched on January 24, 2024, with an outlay of ₹8,500 crore, the scheme aims to achieve 100 million tonnes of coal gasification by 2030, promoting public and private sector involvement.

• **Syngas -** Offers cleaner energy, easier transport, and serves as a feedstock for producing vital chemicals like methanol, ammonia, and hydrogen, alongside power generation.

• **Strategic Importance -** Coal gasification reduces import dependency, utilizes India's vast coal reserves (378.21 billion tonnes in 2023), and supports the nation's clean coal transition and energy security objectives.

Pass-Through Certificates: Investing in Loan Pools

Pass-Through Certificates (PTCs) stand out as an innovative instrument in structured finance. They effectively tackle liquidity issues while providing investors with diversified exposure to a collection of underlying assets.

• **Innovative Tool** - Pass-Through Certificates (PTCs) are debt instruments enabling investors to earn from pooled loans (home, auto, etc.), addressing liquidity and offering diversified exposure.

• **PTC Mechanics** - Lenders sell loan pools to a Special Purpose Vehicle (SPV) or Trust, which issues PTCs. Investors receive repayments from the underlying borrowers' EMIs distributed by the SPV.

• **Securitization Process**: This conversion of illiquid loans into marketable PTC securities is known as securitization, creating investment opportunities.

• **Short-Term Tenure & Returns** - PTCs typically have a 6-12 month tenure, appealing to investors seeking higher returns than traditional fixed income with shorter capital lock-in.

• **Regulation & Transparency** - Governed by RBI and SEBI, PTCs offer a regulated and transparent investment avenue with investor protection and adherence to securitization norms.

Environment

National Endangered Species Day

National Endangered Species Day, is celebrated every year on May 16th, highlights the urgent need for species and habitat protection.

• **Established in -** 2006 by the U.S.-based Endangered Species Coalition,

• **Aims -** To raise public awareness about threats to biodiversity and celebrates conservation successes under the 2025 theme: "celebrate saving species."

• **Indian Context -** India, a biodiversity hotspot, faces numerous endangered species, including Bengal Tigers, Asiatic Lions, and Great Indian Bustards, emphasizing the local relevance of this global day.

• **Conservation Framework -** India employs the Wildlife Protection Act (1972), project-based conservation (e.g., Project Tiger), and a vast protected area network to safeguard its vulnerable wildlife.

• **Key Efforts -** Initiatives encompass habitat conservation, anti-poaching measures, community involvement, research by WII, captive breeding programs like Project Cheetah, and international collaborations.

• **Future Focus -** With a ₹450 crore allocation for wildlife in 2025-26, National Endangered Species Day underscores the continuous commitment needed to protect India's natural heritage for future generations.

Yak Genome Breakthrough for India

Indian scientists at ICAR-NRC on Yak have successfully assembled the first chromosome-level genome of the Indian yak (*Bos grunniens*).

• **Himalayan yak** - Has a long-haired bovine known as the 'ship of the Himalayas', belongs to the Bovini tribe and is vital for high-altitude transport and livelihoods.

• **Habitat and Adaptation** - Native to the Tibetan Plateau and comfortable above 14,000 feet, yaks in India thrive in the cold climates of the northern and northeastern states, tolerating temperatures as low as -40°C with their thick coats and specialized physiology for digesting poor forage.

• **Economic and Cultural Significance** - Yaks are the lifeline of nomadic communities, providing milk, meat, wool, fuel, and transport, underpinning Himalayan economies and traditional transhumance rearing practices.

• **Genetic Resource** - This cold-resilient species offers valuable genetic traits for climate-smart livestock breeding and disease resistance, crucial for future agricultural sustainability.

• **Conservation Impact** - The genome assembly will significantly enhance yak breeding programs and conservation efforts for this ecologically and economically important high-altitude livestock.

Denmark Launches World's First Commercial E-Methanol Plant

On May 13, 2025, Denmark inaugurated the world's first commercial-scale e-methanol plant in Kasso, a significant step in green shipping fuels.

• **Joint Venture** - Developed by European Energy and Mitsui, the facility will annually produce 42,000 metric tons of e-methanol using renewable energy and captured CO_2.

• **Driving Green Shipping** - This initiative directly addresses the shipping industry's pressure to decarbonize, supporting the IMO's 2050 carbon neutrality target with a viable low-emission alternative for major customer Maersk.

• **Plant aims** - To scale e-methanol production for maritime transport, accelerate the shift from fossil fuels, and provide sustainable methanol for other industries like plastics.

• **Global Significance** - E-methanol offers a scalable solution to drastically cut shipping emissions (nearly 3% of global CO_2), with potential for decarbonizing other heavy industries.

• **Future Outlook** - European Energy plans global expansion of similar plants, with cost parity projected around 2035, indicating long-term commercial viability for green methanol.

Security

Exercise Raahat: Boosting Disaster Response in Assam

A recent large-scale joint (Humanitarian assistance and disaster relief) HADR simulation, Exercise Raahat, was conducted in Assam by the Indian Army & National Disaster Response Force (NDRF) to enhance disaster preparedness amid rising climate-induced events.

• **Exercise aimed** - To bolster civil-military cooperation, evaluate multi-agency coordination, demonstrate operational readiness, and simulate real-time responses to floods and landslides.

• **Features -** Held in Assam's Doom Dooma and Tinsukia districts, the live drills involved civilian evacuation, medical airlifts, relief camp setup, communication restoration, and multi-agency participation.

• **Background -** The inaugural Exercise Raahat occurred in Rajasthan (2016), focusing on earthquake response.

• **Exercise reinforces** - India's disaster risk reduction commitment (Sendai Framework), enhances the preparedness of vulnerable northeastern states, showcases rapid inter-agency response capabilities, and promotes community resilience.

• **Overall Impact -** This exercise marks a crucial step in strengthening India's disaster response mechanisms and fostering vital synergy between civil and military entities.

Science

National Dengue Day

India marks National Dengue Day annually on May 16th (today, May 16th, 2025), initiated in 2010 by the Health Ministry to combat this major public health threat.

• **Theme 2025 -** The focus this year is "Act Early, Stop Dengue: Clean Environment, Healthy Life," emphasizing prompt action and environmental responsibility to curb mosquito breeding.

• **Significance -** The day educates about dengue's causes, symptoms, and complications, promoting early medical help and community involvement in prevention.

• **Prevention is Key -** Eliminating stagnant water, using repellents and nets, wearing protective clothing, and maintaining clean surroundings are vital in controlling the Aedes mosquito vector.

• **Government Initiatives -** Public health efforts include fogging and anti-larval measures, alongside community engagement for effective dengue control.

• **Global Context -** While India observes this day nationally, a movement advocates for a World Dengue Day to foster international collaboration against this global burden.

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