Today's Prelims Topics

Income Tax Bill 2025

Context

Lok Sabha has passed the **revised Income Tax Bill, 2025**.

Key Provisions

- Replaces and shortens the existing Income Tax Act, 1961 (2.59 lakh words vs. 5.12 lakh words).
- Reduces chapters from 47 to 23 and sections from 819 to 536.
- Empowers officials to forcibly access personal emails and social media accounts of assessees during searches.
- Allows authorised officers to demand access codes for books, documents, or data in electronic form.
- Permits overriding of access codes to any computer system if codes are not provided.
- Covers all types of personal digital data including passwords, chats, and messages.
- Justified as necessary for retrieving incriminating evidence from electronic devices.
- Criticised for potential misuse, privacy violations, and excessive powers to authorities.

Source: TheHindu

Talaq-e-hasan

Context

The Supreme Court has recently decided to examine multiple petitions that question the constitutional validity of the practice of **talaq-e-hasan**.

About Talaq-e-Hasan

- An extrajudicial form of divorce in Islam, available **only to men.**
- Considered **revocable** and recognised as valid under all schools of Muslim law.
- Traditionally approved by Prophet Mohammad.
- Procedure: Husband pronounces *talaq* three times, with a gap of **one month** between each pronouncement.
- The interval between pronouncements is called the **period of abstinence (iddat)**, lasting **90 days**.
- If the couple resumes cohabitation or intimacy during *iddat*, the divorce is automatically revoked.

Difference from Triple Talaq (Talaq-e-Bidat)

- In Triple Talaq, the husband pronounces *talaq* three times **at once**, making the divorce **instant and irrevocable**.
- *Talaq-e-Hasan* involves a waiting period (*iddat*) and allows revocation if reconciliation occurs before completion.
- The Supreme Court declared the practice unconstitutional in **Shayara Bano v. Union of India (2017)**, and the **Muslim Women (Protection of Rights on Marriage) Act, 2019**, subsequently made it a criminal offense**.**

Source: TheHindu

Dengue Virus (DENV)

Context

A new study has identified EDE-like antibodies as a key factor for developing broad, cross-serotype immunity against dengue, offering new hope for effective vaccine development.

What is DENV (Dengue Virus)?

- DENV refers to **Dengue Virus**, which has **four serotypes** (DENV-1, DENV-2, DENV-3, DENV-4).
- It is the most common vector-borne viral disease, transmitted mainly by *Aedes* mosquitoes.
- Causes a global health burden, especially in Southeast Asia, Africa, and the Americas.

Earlier Vaccination Challenges

- **Primary infection immunity issue:** After the first dengue infection, initial immunity (primary immunity) may **increase risk** of severe disease during a second infection with a different serotype (antibody-dependent enhancement).
- Non-neutralising antibodies can worsen disease by helping the virus enter immune cells.
- Universal vaccine development is hard because immunity must work across **all four serotypes**.
- Past vaccines often only protected against one or two serotypes, leaving risk for severe dengue after subsequent infections.

What are EDE-like Antibodies?

- **EDE** = *Envelope Dimer Epitope*.
- These antibodies target a specific part of the dengue virus envelope protein, allowing **broad, cross-serotype neutralisation**.
- Found to explain **42%–65%** of virus-neutralising effects and **41%–75%** of E protein-binding effects.
- More prevalent in people with prior exposure to multiple dengue serotypes.
- Strongly correlated with reduced severity of dengue illness.
- Represent a promising target for universal dengue vaccine design.

Source: TheHindu

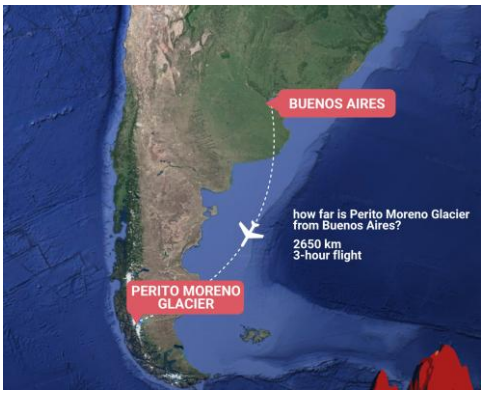
Perito Moreno Glacier

Context

The Perito Moreno Glacier in Argentina, long considered stable, has been thinning rapidly since 2019, raising concerns of an imminent large-scale retreat due to climate change impacts.

About Peroti Moreno

- **Also Known As:** The "White Giant."
- **Location:** Near El Calafate city, Santa Cruz province, **Argentina**.
- **Geography:** Situated in the Andes Mountains, South America.
- **Protected Area:** Part of **Los Glaciares National Park**, a UNESCO World Heritage Site.



Orbiting Carbon Observatory

Context

The US government is planning to shut down **NASA's OCO-2 and OCO-3 satellites**, which monitor atmospheric CO_2 and crop health, raising concerns about the loss of crucial climate change data.

About Orbiting Carbon Observatories (OCO)

- **Purpose:** Series of dedicated NASA Earth-observing satellites designed to monitor atmospheric **carbon dioxide (CO_2)** from space and study its role in climate change.
- **First Mission (OCO):** Launched in February 2009 but failed to reach orbit due to a launch vehicle fairing malfunction.
- **OCO-2:**
  - Launched in **July 2014** as a replacement for OCO.
  - Measures atmospheric CO_2 globally and identifies CO_2 sources and sinks.
  - Operates in a **sun-synchronous polar orbit** for consistent daylight measurements.
- **OCO-3:**
  - Installed on the **International Space Station (ISS)** in 2019.
  - Observes CO_2 at different times of day and collects additional plant growth and crop health data.
- **Key Contributions:**
  - Provided the first detailed global maps of CO_2 distribution.
  - Showed that **boreal forests** (northern coniferous forests) absorb more CO_2 than previously thought.
  - Revealed how carbon sinks like forests can turn into carbon sources due to drought or deforestation.
  - Helped improve climate models and CO_2 emission reduction strategies.
  - Supported agricultural monitoring by forecasting crop yields and drought conditions.

Source: IndianExpress

CEA

Context

The Cooperative Election Authority (CEA) held its first consultative meeting with State Cooperative Election Authorities in New Delhi to strengthen dialogue and ensure that **cooperative society elections are conducted in a free, fair, and transparent manner.**

About Cooperative Election Authority (CEA)

- **Establishment:** Constituted under the **Multi-State Cooperative Societies (MSCS) Act, 2002**.
- **Mandate:** Conduct elections to the boards of **multi-state cooperative societies** in a **free, fair, and transparent** manner.
- **Jurisdiction:** Covers cooperatives registered under the **central act** that operate in more than one state.
- **Functions:**
    - Prepare and update the **electoral rolls** for cooperative society elections.
    - Issue election notifications and oversee the entire election process.
    - Appoint returning officers and other staff for smooth conduct of elections.
    - Ensure compliance with election rules under the MSCS Act and related rules.
- **Composition:**
    - Headed by a **Chairperson**, appointed by the Central Government.
    - Assisted by members and staff for election management.
- **State-Level Coordination:** Works with **State Cooperative Election Authorities** for societies that have both state and multi-state operations.
- **Significance:**
    - Promotes democratic functioning in cooperatives.
    - Ensures representation of members in governance.
    - Prevents disputes and malpractice in cooperative elections.

Source: PIB

Also In News

- Scientists found that **peacock feathers**, soaked with **rhodamine 6G dye,** can act like **tiny lasers, emitting narrow light beams**.
    - **Different feather regions favored distinct wavelengths** (574 nm or 583 nm) with varying power thresholds.

Editorial Summary

Ethanol Blending In India

Context

India pushes ethanol blending for fuel import savings and lower emissions, but faces challenges.

What is Ethanol and Why it's Used

- **Definition**: Ethanol (C_2H_5OH) is a renewable biofuel made by fermenting sugars from biomass (e.g., sugarcane, maize, broken rice, molasses).
- **Nature**: Colourless, volatile liquid; oxygenated fuel.
- **Use in fuel**: Mixed with petrol to form blends like E5, E10, E20 (E = ethanol, number = % ethanol in blend).
- **Origin of blending**:
  - Initiated in early 2000s; scaled up under the **Ethanol Blended Petrol (EBP) Programme**..
- **Benefits claimed**:
  - **Carbon neutrality** (though debatable in practice).
  - **Import substitution**: For India, 20% blending could save ~$10 billion annually.
  - **Lower prices** (though not always reflected at fuel pumps).
- **Current Status**
  - **2014**: Blending level was just **1.53%** under the Ethanol Blended Petrol (EBP) Programme.
  - **2022**: Achieved **10% blending** *five months ahead* of target.
  - **Original Goal**: 20% blending (E20) set for **2030**.
    Revised Goal: Advanced to **2025** due to faster progress.
  - **Current Status (Current ESY)**: **E20 blending achieved** ahead of the 2025 target.

ESY: *Ethanol Supply Year* runs from **November to October**.

- **Feedstock in India**:
  - C-heavy molasses (by-product of sugar industry).
  - Damaged/broken rice.
  - Maize and other starch-based crops.

Downsides and Concerns

- **Agricultural & Food Security Risks:** Diverts crops like rice and maize from food to fuel, especially during shortage years.
  - Once ethanol economy matures, political and economic pressure may prioritise industry over food needs.
- **Economic Limitations:** Import substitution benefits reduced if farm inputs (e.g., fertilisers) are imported (fertiliser imports cost ~$10B annually).
  - Retail fuel price reductions not visible despite cheaper ethanol.
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- **Technical / Engineering Issues:**
  - **Efficiency penalty**: Lower energy density compared to petrol.
  - **Material durability & corrosion**: Can damage fuel handling systems over time.
  - **Vehicle compatibility**: BS 2 norms (India, since 2001) can handle up to E15 safely.
    - Vehicles since 2023 designed for E20.
    - Older vehicles may not be compatible beyond E5.
- **Policy & Market Concerns:**

- **No consumer choice**: Blended petrol is default, even for older vehicles not designed for higher ethanol content.
- **Price claims not visible**: Lower cost of ethanol blending not reflected in retail prices.
- **Transparency gap**: Automakers not disclosing ethanol tolerance of older models.
  - Lack of clear mitigation measures for older vehicles.
- **Insurance & liability**: Government should back claims if ethanol damage occurs.

Major Takeaways / Policy Needs for India

- **Clear vehicle compatibility disclosures**: Automakers should publish ethanol tolerance for all past models.
- **Mitigation plans**: For older vehicles (e.g., fuel system upgrades, material replacements).
- **Insurance safeguards**: Ensure ethanol-related damages are covered.
- **Food security balance**: Avoid displacing food crops or risking shortages.
- **Transparent pricing**: Pass ethanol blending savings to consumers.
- **Gradual rollout with norms**: India is adopting E27 norms (following Brazil), but must ensure readiness before scaling.

Source: The Hindu

Digital push, especially in the classroom, reveals cracks in access and empathy

Context

- India is witnessing a rapid push towards **technology-driven governance and service delivery**, with digitalisation seen as a key tool for efficiency, transparency, and outreach.
    - From **AI-powered learning tools in schools** to **online pension portals** and **centralised university admissions**, the government is integrating technology into critical sectors.
    - While these initiatives promise improved access and modernisation, their design and implementation raise concerns about inclusivity, human-centricity, and unintended socio-psychological impacts.

Recent Government Initiatives in Technology- Driven Governance and Service Delivery

- **AI in Early Education** – Pilots such as AI-powered anganwadis in Maharashtra using smart boards, VR headsets, and interactive learning modules for pre-school children.
- **SPARSH Pension Portal** – Digital pension management system for armed forces veterans, aiming to streamline access and reduce paperwork.
- **Centralised Online Admission Systems** – Platforms like CUET-based admissions integrating multiple institutions into a single online counselling process.
- **Digital India Mission** – Expansion of broadband connectivity, e-governance platforms, and public digital infrastructure.
- **National AI Strategy** – NITI Aayog's vision to integrate AI across sectors such as health, education, and agriculture.
- **Facial Recognition & Biometric Systems** – Used in welfare schemes, airport entry (DigiYatra), and law enforcement.

Concerns Associated with These Initiatives

- **Exclusion of Vulnerable Groups** – Limited digital literacy, poor connectivity in rural areas, and accessibility barriers for elderly citizens (e.g., SPARSH pension users).
- **Erosion of Human-Centric Processes** – AI in early education risks replacing teacher-student bonds with screen-based interaction, undermining emotional and social development.
- **Over-centralisation and Rigidity** – Centralised admission systems create procedural bottlenecks and limit local flexibility.
- **Psychological Impact on Children** – Excessive exposure to virtual reality and AI may weaken real-world sensory learning and relational development.
- **Technological Determinism** – Assumption that digitalisation is inevitable, without adequately questioning suitability or risks in specific contexts.
- **Data Privacy & Security Risks** – Large-scale personal data collection without robust safeguards.

Way Forward

- **Human-Centric Technology Design** – Ensure technology complements, rather than replaces, human roles in education, governance, and service delivery.
- **Inclusive Access & Training** – Digital literacy campaigns, assisted service centres, and multi-lingual interfaces to bridge the digital divide.
- **Context-Specific Application** – Avoid one-size-fits-all digital models; adapt solutions to local needs, capacities, and infrastructural realities.
- **Hybrid Models** – Blend digital platforms with offline mechanisms, especially in sensitive areas like early childhood education and pensions.
- **Continuous Feedback & Audit** – Institutionalise mechanisms for user feedback, usability testing, and periodic review of digital systems.

- **Ethical & Regulatory Frameworks** – Strong data protection laws, AI ethics guidelines, and safeguards against algorithmic bias.

Source: Indian Express

Reviving Civic Engagement in Health Governance

Context

- Recent State-level initiatives such as **Tamil Nadu's Makkalai Thedi Maruthuvam** (2021) and **Karnataka's Gruha Arogya** (2024–25) reflect a shift towards proactive, doorstep health care, especially for non-communicable diseases.
    - While these schemes bring services closer to citizens, they raise a critical question: **are citizens equally able to engage with and influence health governance?**
    - Meaningful community participation is key to accountability, trust, and better health outcomes, yet in India, such engagement remains uneven and often symbolic.

Health Governance

- Health governance refers to **the processes, structures, and actors involved in making decisions, setting policies, and managing resources** for health services. In India, it now involves:
    - **Government bodies** at national, State, and local levels.
    - **Civil society groups**, professional associations, hospital bodies, and trade unions.
    - **Formal platforms** like *Village Health Sanitation and Nutrition Committees (VHSNCs)*, *Rogi Kalyan Samitis*, *Mahila Arogya Samitis*, and ward committees.
    - **Informal channels** such as community networks, NGOs, and media advocacy.
- The **National Rural Health Mission (2005)** institutionalised public participation, with untied funds and inclusion of women and marginalised groups in planning. However, these mechanisms often fail to function effectively.

Significance of Civic Engagement in Health Governance

- **Strengthens Accountability:** Citizens can monitor service delivery, question inefficiencies, and ensure health budgets and schemes are implemented as intended.
- **Promotes Democratic Values:** Participation affirms people's **agency and self-respect**, countering the top-down "beneficiary" approach.
    - Helps combat **epistemic injustice** by recognising community knowledge alongside expert opinion.
- **Improves Service Uptake & Outcomes:** Collaboration between communities and frontline workers increases trust, leading to higher utilisation of preventive and curative services.
- **Challenges Elite Domination:** Inclusive participation reduces capture of health systems by a small group of medical or commercial elites, leading to more equitable decisions.
- **Enhances Responsiveness:** Local inputs help design interventions that are culturally relevant and suited to the community's needs, improving efficiency.
- **Facilitates Intersectoral Action:** Civic voices highlight links between health and social determinants like sanitation, nutrition, and livelihoods, prompting integrated policy responses.
- **Builds Resilience:** Strong community networks enhance preparedness and collective action in crises (e.g., epidemics, disasters).

Impediments in India's Health Governance

- **Mindset of Policymakers and Providers:** Communities seen as **passive beneficiaries**, not rights-holders or co-creators.
    - Success measured by **numerical targets** rather than community experience or empowerment.
- **Weak or Non-functional Platforms:** In some areas, committees like Village Health Sanitation and Nutrition Committees (VHSNCs) are not established.
    - Where they exist: **infrequent meetings**, poor intersectoral coordination, underutilised funds.

- **Hierarchical, Medicalised Administration:** Dominance of doctors in leadership, with limited public health training.
    - Promotions based on seniority rather than expertise in governance or community engagement.
- **Resistance to Public Participation:** Concerns over increased workload and accountability.
    - Fear of **regulatory capture** by elite medical or commercial interests.
- **Structural Barriers for Citizens:** Low awareness of health rights.
    - Social hierarchies limiting participation of marginalised groups.
    - Lack of civic literacy in health governance processes.
- **Alternative, Confrontational Channels:** Citizens resort to protests, legal action, and media campaigns when formal avenues fail, indicating unmet needs for dialogue.

Way Forward / Solutions

- **Empower Communities:**
    - **Dissemination** – Widespread communication about health rights, governance platforms, and opportunities for participation.
    - **Early Civic Education** – Foster awareness in schools and community forums.
    - **Inclusion of Marginalised Groups** – Proactive outreach to women, rural poor, and socially disadvantaged communities.
    - **Capacity Building** – Train citizens in participatory planning, budget tracking, and monitoring.
- **Sensitise Health System Actors:**
    - **Shift in Perspective** – View communities as partners, not targets.
    - **Public Health Training for Leaders** – Equip administrators with skills in participatory governance and community facilitation.
    - **Decentralised Planning** – Strengthen bottom-up planning in *Programme Implementation Plans* under NHM.
- **Strengthen Governance Platforms:**
    - **Functional Committees** – Ensure regular meetings, clear roles, and utilisation of untied funds.
    - **Intersectoral Coordination** – Link health with nutrition, sanitation, and social welfare sectors.
    - **Monitoring & Accountability** – Include community feedback in performance reviews.

Conclusion

Doorstep delivery of health care is only half the journey; the other half lies in **bringing citizens into the heart of health governance**. Without empowered communities and responsive systems, even the best-designed schemes risk remaining top-down interventions. Building an inclusive, participatory, and accountable governance culture is essential for equitable and sustainable health outcomes.

Source: The Hindu