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Retractions alone do not protect India's scientific record

Prelims: General Studies Paper 1

Current events of national and international importance

Mains: General Studies 3

Awareness in the fields of IT, Space, Computers, robotics, nano-technology, bio-technology and issues relating to intellectual property rights.

Why in Focus?

- A recent study by Tumkur University, Karnataka **highlights that retracting a faulty or fraudulent research paper does not automatically correct the scientific record**, as other researchers may continue citing and building on the retracted work.

Key Highlights

- Retraction is the formal withdrawal of a published research paper because of serious errors**, misconduct, fraud or other problems.
- Retractions **have increased substantially over the past four decades**, with reasons including **plagiarism, ethical violations, data concerns** and publication misconduct.
- A 2026 study examined 12,000+ citations of Indian government-funded papers that were later retracted and found that 30% of citations occurred after retraction.

- Researchers **identified a “cascading retraction effect”**, where **retracted papers continue to influence later studies** that may themselves eventually be retracted.
- Nearly 64% of second-generation papers in this cascading effect were authored by the same research groups.

Implications

- Researchers may continue using incorrect or unreliable findings** after a paper is retracted.
- Lack of awareness among early-career researchers can lead to improper citation** of retracted studies.
- Journals and institutions often have weak systems** for notifying researchers about retractions.
- Retracted research can continue influencing patents and AI-generated outputs** if databases and AI models are not updated.
- Retraction alone may not fully correct the scientific record** if corrective research is never conducted.

Way Forward

- Introduce automatic checks for retracted references** during peer review.
- Establish dedicated research-integrity support offices** in institutions.
- Provide regular training in responsible research** and citation practices.
- Strengthen peer review, data sharing** and institutional accountability.



- **Ensure scientific databases and AI systems** clearly flag retracted research.

Mains Question

“Retraction is necessary but not sufficient to maintain the integrity of scientific research. Examine the challenges associated with retracted research and suggest measures to strengthen research integrity in India.” (250 Words)

What does ChatGPT for Teens entail?

Prelims: General Studies Paper 1

Current events of national and international importance

Mains: General Studies 3

Awareness in the fields of IT, Space, Computers, robotics, nano-technology, bio-technology and issues relating to intellectual property rights.

Why in Focus?

- On August 18, OpenAI launched ChatGPT for **Teens for users aged 13–17, with stronger safeguards following growing concerns over AI chatbots’** impact on children’s mental health, safety, emotional dependence and learning.

AI chatbots are software applications powered by artificial intelligence that interact with users through natural-language conversations, answering questions, generating content, or performing tasks

Key Highlights

- **ChatGPT for Teens includes parental controls, quiet hours, study mode and alerts** for high-risk situations.
- **Users identified as minors, as well as users whom the system determines to be under 17**, can be placed under the teen experience.
- The **chatbot restricts content involving self-harm, suicide, violence, eating disorders, dangerous activities** and explicit sexual or graphic material.
- **Study Mode focuses on learning rather than simply providing answers.** For example, it

guides students through a maths problem step-by-step using questions and hints.

- **Parents can link their accounts with their teen’s account and receive alerts in certain serious, high-risk situations**, which are reviewed by human moderators.

Implications

- **AI chatbots may contribute to emotional over-reliance and unhealthy attachment**, particularly among young users.
- **Excessive dependence on AI for education may weaken critical thinking** and independent learning.
- The **effectiveness of safety safeguards remains uncertain** as AI systems become increasingly human-like.
- **India currently has no standalone legislation** specifically regulating children’s use of AI chatbots.

Way Forward

- **Develop age-appropriate AI safety standards** for children and teenagers.
- **Strengthen parental controls, age verification** and human oversight.
- **Promote AI literacy and digital well-being** among students, parents and teachers.
- **Ensure AI tools support critical thinking** rather than replacing independent learning.
- **India should consider a clear regulatory framework for children’s interaction with AI systems**, balancing innovation with child safety.

Mains Question

“The growing use of AI chatbots among children creates both educational opportunities and new risks. Discuss the need for age-appropriate AI regulation and safeguards for children in India.” (250 Words)



What are the U.S.'s latest allegations against India?

Prelims : General Studies Paper I

Current events of national and international importance

Mains: General Studies 2

Effect of policies and politics of developed and developing countries on India's interests, Indian diaspora.

Why in Focus?

- The **U.S. White House** has accused India and around **40 countries** of helping China evade U.S. tariffs by routing Chinese goods through third countries.

Key Highlights

- Chinese goods are being routed through third countries** where they may undergo limited assembly, repackaging or relabelling before being exported to the U.S.
- The U.S. has identified **India, Mexico and Vietnam** among the major transshipment hubs for Chinese goods.
- Around **\$67 billion** worth of U.S.-bound goods were allegedly transshipped through major hubs in 2025, causing an estimated **\$28 billion loss in U.S. tariff revenue**.
- The U.S. report alleges that Indian production hubs, including the **Pune-Gujarat-Chennai belt**, receive Chinese industrial goods that are later linked to exports to the U.S.
- U.S. tariffs reduced imports from **China**, but overall U.S. imports from all countries increased, suggesting that imports shifted to **other countries rather than domestic production**.
- India could face **additional U.S. tariffs** if Washington takes punitive action over alleged Chinese transshipment.
- India's manufacturing sector relies increasingly on **Chinese raw materials and intermediate goods**, while the share of Chinese finished goods in India's imports has declined.
- Electronic components** increased from **3.3% to nearly 13%** of India's imports from China between 2015-16 and 2026-27.

- India's **"Make in India, For the World"** strategy still depends significantly on Chinese inputs, so restricting these imports could **increase production costs and reduce export competitiveness**.

Implications for India

- Additional U.S. tariffs could **hurt India's exports and economic growth**.
- Reducing Chinese intermediate imports could **raise manufacturing costs** and make Indian products less competitive globally.
- India needs to **diversify its supply chains and domestic production of critical intermediate goods** to reduce external vulnerabilities.
- The allegations could add another source of **trade friction between India and the U.S.**, affecting broader economic relations.

Way Forward

- India should strengthen **customs-origin verification and supply-chain traceability** to ensure that Chinese goods are not illegally relabelled as Indian products.
- Indian exporters should maintain **clear documentation of the origin and processing of goods** to reduce the risk of U.S. customs disputes.
- India should expand **domestic production of critical intermediate goods** while diversifying imports from reliable alternative suppliers.
- India should use **bilateral dialogue with the U.S.** to distinguish legitimate Indian manufacturing and value addition from cases of illegal tariff evasion

Mains Question

Q. The increasing use of third-country routes to circumvent tariffs has emerged as a challenge to global trade governance. Discuss the implications of the U.S. allegations of Chinese transshipment through India for India's manufacturing sector and trade relations with the U.S. (250 Words)



What did Trump say about India's voting system?

Prelims : General Studies Paper I

Current events of national and international importance

Mains: General Studies 2

Effect of policies and politics of developed and developing countries on India's interests, Indian diaspora.

Why in Focus?

- U.S. President **Donald Trump** has compared voter identification and registration practices in the **U.S. and India** while supporting the **Safeguard American Voter Eligibility (SAVE America) Act**.

Key Highlights

- The **U.S. Constitution** gives State legislatures primary responsibility for conducting federal elections, unlike India, where the **Election Commission of India (ECI)** supervises the electoral process nationwide.
- In the U.S., **voter registration is voter-initiated**, while in India the ECI prepares electoral rolls through its own registration and enumeration process.
- Documentary proof of citizenship is generally not required** for voter registration in the U.S., though voters must affirm their citizenship under penalty of perjury.
 - ◆ **"Under penalty of perjury"** means a person **declares that the information is true**, with **legal consequences for false statements**.
- 36 U.S. States** require voter identification at polling stations, including **23 States** requiring **photo ID**.
- The **SAVE America Act** would require documentary proof of citizenship and government-issued photo ID for voter registration or updating voter records.
- The Act is opposed partly because **over 20 million eligible U.S. citizens** may not have ready access to a passport or birth certificate.
- Independent studies indicate that **non-citizen registration in the U.S. is largely accidental**, with only a small proportion of such cases resulting in voting.

- India's **Special Intensive Revision (SIR)** puts more responsibility on **voters to prove their eligibility** through self-enumeration and verification.
- By Phase 2 of the SIR, **more than 7 crore names were deleted** from the electoral rolls.
 - ◆ Concerns were also raised about changes in the **gender ratio and religious composition** of the rolls.
- The **Supreme Court held that the SIR falls within the ECI's statutory mandate**, despite concerns over its implementation.

Implications

- Strict documentary requirements may **exclude eligible citizens** who lack the required identity or citizenship documents.
- Shifting the burden of proving eligibility onto voters may increase the risk of **wrongful deletion from electoral rolls**.
- Errors in voter-roll revision can affect **electoral participation and public trust** in the election process.

Way Forward

- Electoral reforms should ensure **accurate and updated voter rolls** without creating unnecessary barriers for eligible voters.
- Voters facing deletion or exclusion should have **simple and accessible opportunities to provide documents and appeal decisions**.
- Electoral authorities should use **transparent and verifiable procedures** when conducting intensive voter-roll revisions.
- Voter verification should maintain a balance between **preventing ineligible voting and protecting every eligible citizen's right to vote**.

Mains Question

Q. The U.S. and India follow different approaches to voter registration, identification and electoral-roll preparation. Compare these approaches and examine the challenges of balancing electoral integrity with inclusive voter participation.(250 Words)

KEYWORDS

Bhitardari chert



- Researchers identified a **3.5-billion-year-old carbon-rich chert** from the **Singhbhum Craton** near **Bhitardari village**, about **20 km south of Jamshedpur, Jharkhand**.
- The **Singhbhum Craton** is an ancient, stable block of **continental crust** extending across parts of **Jharkhand and Odisha** and contains some of India's **oldest rocks**.
- The rock was dated to about **3.497 billion years** using **uranium-lead dating of zircon crystals** embedded within it.
- It contains alternating thin layers of **silica and carbon-rich material**, resembling fossilised **microbial mats** formed by ancient bacteria and archaea.
- The **carbonaceous material** may have a **biogenic origin**, meaning it was **produced by ancient living organisms**.
- Suggesting evidence of **biological activity** around **3.5 billion years ago**.
- The rock is a **banded chert**, a hard, fine-grained **silica-rich rock** that can preserve organic material for billions of years.

External Commercial Borrowings (ECBs)

- External Commercial Borrowings (ECBs) **refer to funds borrowed by Indian companies from foreign sources through loans, bonds or other financial instruments**.

- ECBs can **be raised from foreign banks, international financial institutions and other recognised foreign lenders**.
- ECBs **may be rupee-denominated or foreign currency-denominated**, depending on the terms of borrowing.
- ECBs are **regulated by the Reserve Bank of India (RBI) under the Foreign Exchange Management Act, 1999** and relevant RBI regulations.
- ECBs can **expose borrowers to risks such as exchange-rate risk, interest-rate risk and regulatory risk**, particularly when loans are denominated in foreign currencies.

Biochar

- Biochar is a **carbon-rich material produced by heating agricultural or other biomass in low-oxygen conditions**.
- It is **generally produced through pyrolysis** (thermal decomposition of biomass in the absence or limited supply of oxygen).
- Biochar **can act as a long-term carbon sink, potentially storing carbon in soil for hundreds of years**.
- In agriculture, **biochar can improve soil water retention, soil structure and the environment** for beneficial microorganisms.
- Biochar has **potential applications in carbon capture, wastewater treatment and low-carbon construction materials**.





Places in News

Khalingduar Reserve Forest

- Khalingduar Reserve Forest is located in **Udalguri district of Assam, in the Bodoland Territorial Region (BTR)**.
- It **lies along the India–Bhutan border** and forms part of an important transboundary forest landscape.
- The **forest is an important habitat and movement corridor for Asian elephants** and is associated with the Ripu-Khalingduar Elephant Range.
- It **faces human–elephant conflict, partly due to habitat fragmentation, deforestation** and the presence of settlements and tea estates.
- **Recent restoration efforts have explored the use of biochar made from invasive plants to restore degraded elephant habitat** and help control invasive species.



Species In News

Narwhal

- The **narwhal** is a **medium-sized toothed whale** found exclusively in **Arctic waters**.
- Unlike other toothed whales, it has **no functional teeth in its mouth**; males usually have a single long **tusk** extending from the upper left jaw.
- The tusk can grow **2-3 metres** long and develops in a distinctive **counterclockwise spiral**. **Females rarely have tusks**.
- Narwhals are among the **deepest-diving marine mammals**, capable of diving to depths exceeding **1,800 metres**.
- Their diet includes **Greenland halibut, Arctic and polar cod, shrimp, and Gonatus squid**.
- Narwhals feed **intensively during winter** and eat less during the **ice-free summer**, unlike many other sub-Arctic whale species.

