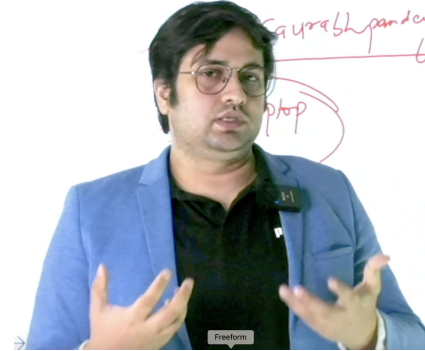


# Topics - MINDS MAPS included



- Long Range Glide Bomb (LRGB) - Gaurav
- Polar ice melts and Lengthening of day
- Mount Vesuvius
- Role of SAARC (South Asian Association for Regional Cooperation)
- Union government and delhi
- ballast water
- The Charru mussel
- - Salar de Olaroz and lithium
- Mains



By saurabh Pandey



**Target Mains -2024/25 -**

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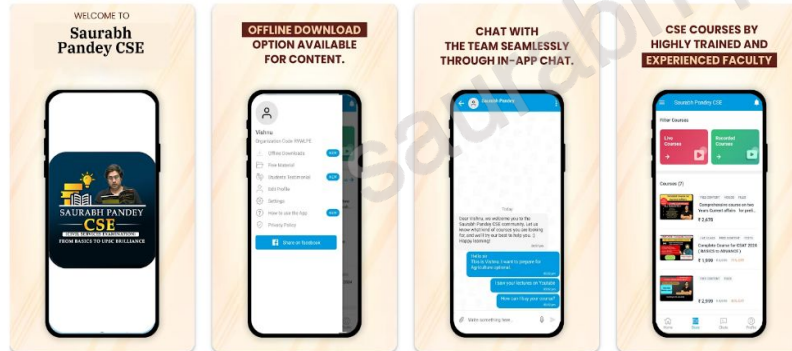
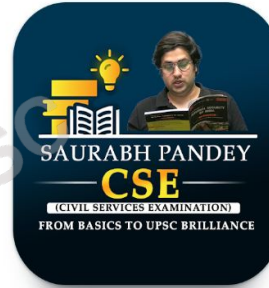
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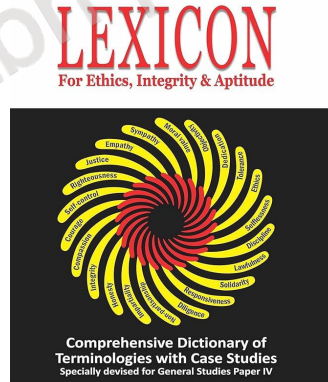
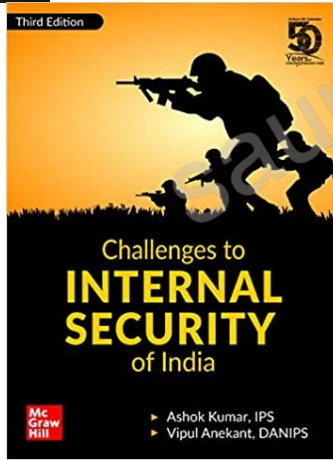
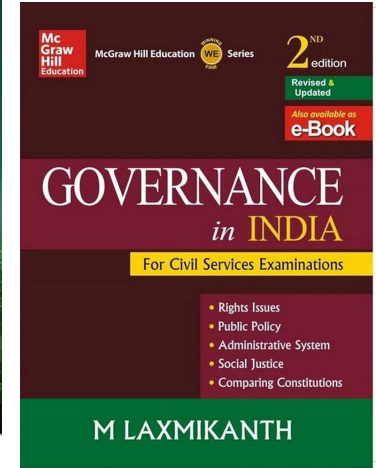
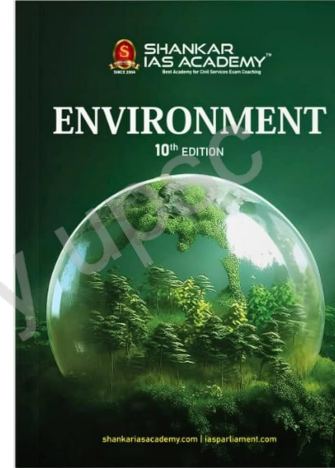
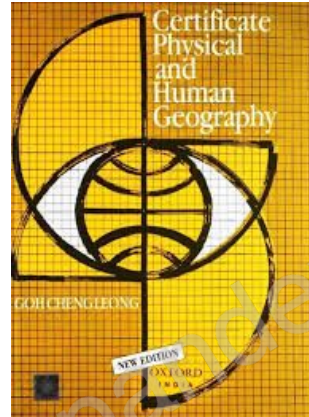
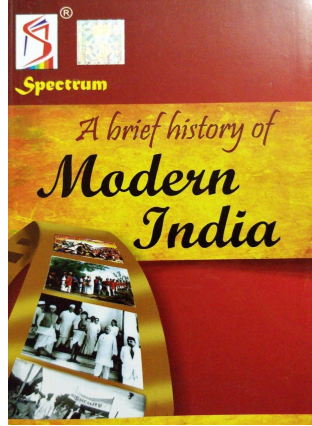
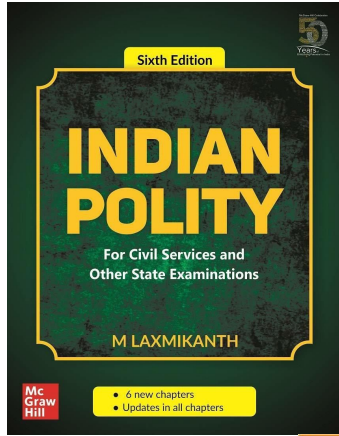
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# Topic- Long Range Glide Bomb (LRGB) - Gaurav

## Overview

**Definition:** Long Range Glide Bomb (LRGB) is an advanced precision-guided munition designed for extended range targeting.

**Purpose:** Enhance strike capabilities of air forces, particularly in precision targeting.

## Key Features

**Range:** Capable of striking targets from significant distances.

**Guidance System:** Utilizes GPS and advanced navigation systems for accuracy.

**Delivery Platform:** Compatible with multiple aircraft, including Sukhoi-30MKI.

## Development

**Developer:** Developed by DRDO (Defense Research and Development Organization), India.

**Significance:** Represents a significant step in indigenous defense technology.

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## Testing and Validation

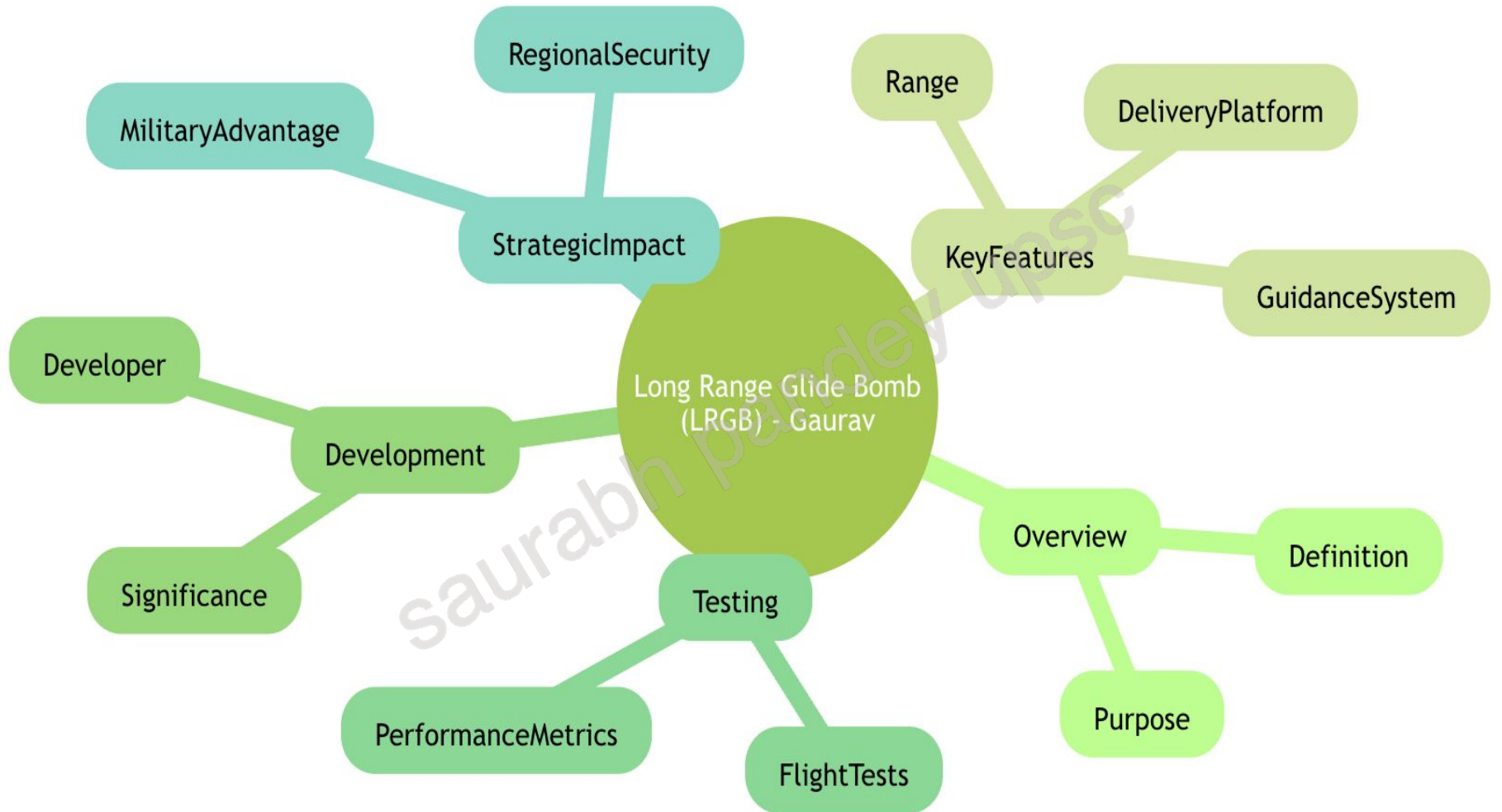
**Flight Tests:** Successful maiden test flights conducted from Sukhoi fighter jets.

**Performance Metrics:** Focus on accuracy, range, and payload capacity.

## Strategic Impact

**Military Advantage:** Enhances deterrence capabilities against adversaries.

**Regional Security:** Strengthens national defense posture in the region.





## Topic- Polar ice melts and Lengthening of day

When polar ice melts, the water flows to the equator, which makes the earth bulge out slightly.

This increases the moment of inertia, and the rotation rate slows, increasing the time taken to complete a rotation and thus lengthening our day

**The moment of inertia is a measure of how resistant an object is to changes in its rotational motion.**

Over the last two decades, climate's effects on sea levels around the equator have slowed the rate of the earth's rotation by around 1.3 milliseconds per century.

- **If high emissions persist, this rate will change to 2.6 ms**
- **These studies prove that climate change is interfering with something as fundamental as how the earth spins around its axis.**
- **Scientists found that the location where the earth's axis intersects the crust is moving ever so slightly over time**

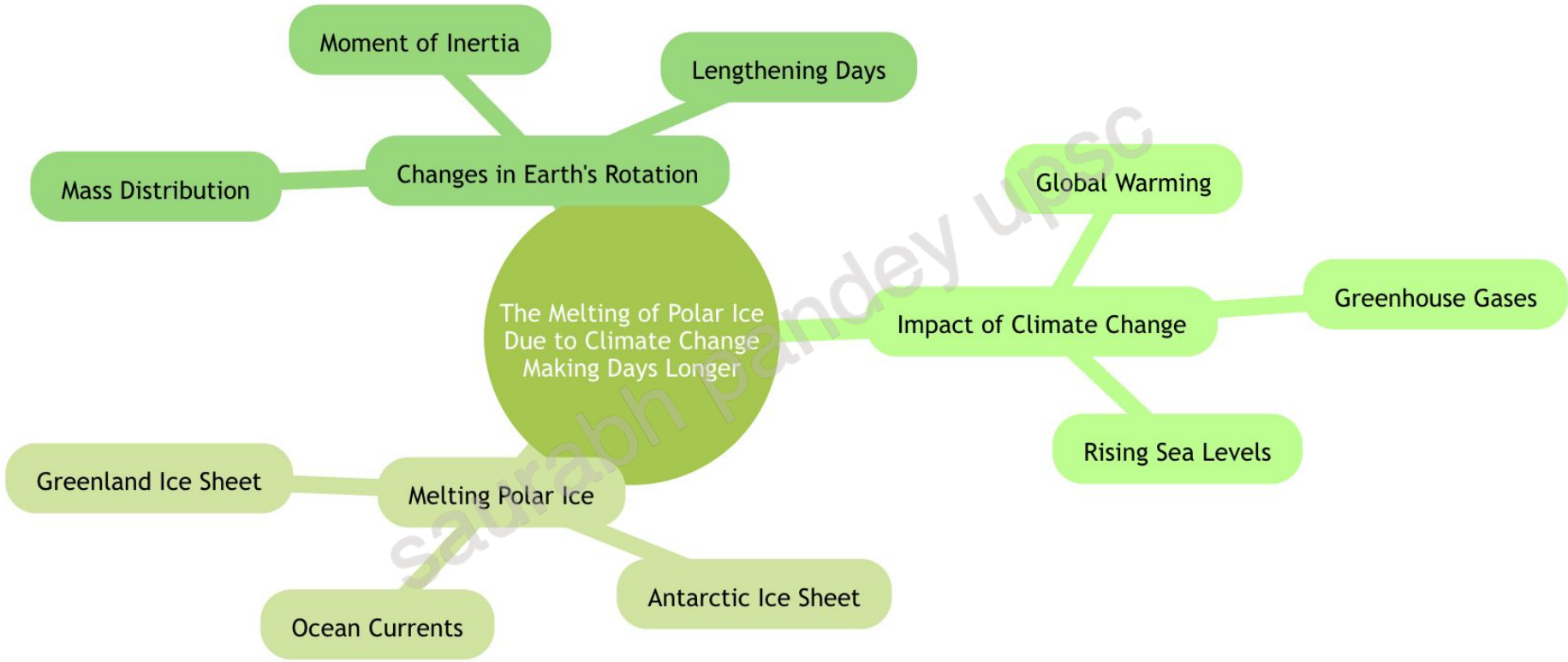


Figure 1.9: Table

# Topic- Mount Vesuvius



- **Mount Vesuvius is one of the most famous volcanoes in the world, primarily due to its eruption in 79 AD, which destroyed the Roman cities of Pompeii and Herculaneum.**
- **Located on the Gulf of Naples in Italy, about 9 kilometers (5.6 mi) east of Naples, Vesuvius is the only active volcano on the European mainland.**
- **It is also one of the most densely populated volcanic regions in the world, with several million people living in the vicinity of the volcano.**

## **Geological Characteristics:**

- **Mount Vesuvius is a stratovolcano, which means it is composed of layers of solidified lava, volcanic ash, and other materials.**
- **Its shape is a classic volcanic cone, and it stands about 1,281 meters (4,203 feet) above sea level.**
- **The volcano has had several periods of activity, with the most famous eruption occurring in 79 AD, which was classified as a Plinian eruption, characterized by its explosive nature and the ejection of pumice and volcanic ash.**

## **Topic- SAARC AND PAN SOUTH ASIA**

- **India must instead revive pan-South Asian mechanisms such as the South Asian Association for Regional Cooperation (SAARC), and find ways to engage with the neighbourhood without external interference.**
- **Bilateral issues with Pakistan have led to a boycott of SAARC for a decade now. New Delhi must also consider whether it would abandon the other mechanism, the Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation, or BIMSTEC, if ties with Bangladesh worsen, in the manner it has abandoned SAARC, and where that would leave it.**

- **Finally, not just New Delhi but all South Asian capitals must focus on certain common lessons from the last few years of turmoil and election results.**
- **Joblessness and unequal growth are fuelling anger on the streets and must be addressed.**
- **However, no amount of economic progress can cover up for democratic backsliding.**
- **In modern democracies, the sting of dissent is unsustainable in the long run.**
- **The old dictum that if you want to ‘raise crop for one year, plant corn...**
- **If you want to plant a crop for eternities, raise democracies’ holds true for India and its ties in the neighbourhood.**

# Role of SAARC (South Asian Association for Regional Cooperation)



## Overview

SAARC is an intergovernmental organization aimed at promoting economic and regional integration in South Asia. 🌍

Member states include Afghanistan, Bangladesh, Bhutan, India, Nepal, the Maldives, Pakistan, and Sri Lanka. 🇦🇫 🇧🇩 🇮🇳 🇵🇰 🇳🇵 🇲🇩 🇵🇰 🇸🇯

## Objectives of SAARC

- Promote economic growth and social progress.
- Enhance cultural development and regional cooperation.
- Strengthen mutual assistance among member states. 🤝



## Key Roles

- **Economic Integration:** Facilitate trade and investment among member countries. 💰
- **Peacekeeping:** Promote peace and stability in the region. ☮️
- **Cultural Exchange:** Encourage cultural ties and understanding among diverse populations. 🎉
- **Collective Security:** Address common security concerns through collaboration. 🔒

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# Challenges



**Political Differences:** Tensions among member states can hinder cooperation. ⚠️

**Economic Disparities:** Varied economic conditions limit collective progress. 📈

**Limited Influence:** Compared to other regional organizations like ASEAN or EU. 🏛️

## Future Prospects

**Increased Collaboration:** Focus on sustainable development goals and climate change. 🌱

**Greater Integration:** Explore deeper economic ties and partnerships with global organizations. 🌍



figures 1.1: mindmap



figure 1.2: table

# Union government vs Delhi

Since 2015, the Union government led by the BJP and the Delhi government led by AAP have been at loggerheads on various issues

| Case / Amendment   | Brief description   | Implication   |
|--|---|---|
| <i>Govt of NCT of Delhi vs Union of India (UOI) (2016)</i> | The Delhi High Court ruled that the LG of Delhi exercised complete control of all matters relating to the NCT of Delhi  | It made the appointed LG the executive head, reducing the powers of the elected government of Delhi   |
| <i>Govt of NCT of Delhi vs UOI (2018)</i>                  | On appeal against the Delhi HC judgment, the Supreme Court held that the LG was bound by the 'aid and advice' of the council of ministers headed by the Chief Minister of Delhi except on matters relating to public order, police and land | This restored the powers of the elected government of the NCT of Delhi in matters of day-to-day administration                                  |
| Government of NCT of Delhi (Amendment) Act, 2021           | It required the council of ministers to obtain the opinion of the LG before any executive action on matters specified by the LG   | This amendment tilted the balance of power again in favour of the LG  |
| <i>Govt of NCT of Delhi vs UOI (2023)</i>                  | A Constitution Bench of the Supreme Court in May 2023 had held that the Delhi assembly and government shall have legislative and executive powers over 'services' except in relation to public order, police and land                       | This restored the powers of the elected government of the NCT of Delhi in matters of day-to-day administration including postings and transfers |
| Government of NCT of Delhi (Amendment) Act, 2023           | It created the National Capital Civil Service Authority for deciding on matters relating to 'services'. This authority will consist of the Chief Minister, the Chief Secretary and the Home Secretary of Delhi                              | This had the effect of again reducing the importance of the elected government and Chief Minister in decisions relating to 'services'           |

Article with title: An over

# Topic- ballast water



## The story so far:

The Tamil Nadu Water Resources Department (WRD) has informed the National Green Tribunal that it has sought ₹160 crore from the Kamarajar Port in Ennore, Tamil Nadu, to facilitate the removing of invasive mussels on the coast near the port in connection with an ongoing case on the proliferation of *Mytella strigata*, or charru mussel that harms marine ecosystems and hinders fisher boat movements, affecting their livelihood.

## **What is ballast water?**

**Ships need to have a certain level of immersion into the sea to be stable. When a ship discharges cargo, it rises up in the water and therefore, to keep a minimum level of immersion, ship staff take in sea water called ballast water inside tanks in the ship.**

**And when the ship loads cargo, leading to more immersion, the ballast water is pumped out of the ship.**

**Until recently, there was no bar on taking in and pumping out of ballast water at ports, in the ocean, along the coast and so on.**

**Since ballast water carries invasive species into other countries that destroy ecosystems, global shipping has sought to regulate ballast water discharge.**

## What are global regulations?

**The Ballast Water Management (BWM) Convention of the International Maritime Organization (IMO) came into force in 2017 to help prevent the spread of potentially harmful aquatic organisms and pathogens in ships' ballast water.**

**From September 8, 2017, ships must manage their ballast water so that aquatic organisms and pathogens are removed or rendered harmless before the ballast water is released in a new location**

## International Focus on Ballast Water

- **IMO's Ballast Water Management Convention:** The International Maritime Organization (IMO) has established regulations to prevent the spread of harmful aquatic organisms through ships' ballast water.
- **Compliance Requirements:** The convention outlines standards and procedures for the management and treatment of ballast water to minimize the risk of invasive species transfer.
- **India's Obligations:** India, as a signatory to the convention, is obligated to implement measures to ensure compliance with the international standards for ballast water management.

-



## Indian Regulations on Ballast Water

- **National Legislation:** India has enacted laws and regulations to address ballast water management, aligning with the IMO's standards and guidelines.
- **Compliance Framework:** The Directorate General of Shipping, Government of India, has issued guidelines and circulars to ensure compliance with the Ballast Water Management Convention.
- **Enforcement and Oversight:** Indian authorities oversee the implementation of ballast water regulations to prevent the introduction of invasive species in Indian waters.

## Impacts, Mitigation, and Educational Outreach

### : Ecological Impacts of Ballast Water

- **Invasive Species Introduction:** Improper ballast water management can lead to the introduction of non-native species, disrupting local ecosystems and biodiversity.
- **Economic Consequences:** The ecological impacts of invasive species can have far-reaching economic implications, affecting fisheries, aquaculture, and coastal industries.
- **Educational Case Studies:** Exploring real-world examples of invasive species introductions can illustrate the importance of effective ballast water management.

## About The Charru mussel

- The Charru mussel, scientifically known as *Mytella charruana*, is a species of marine bivalve mollusk that belongs to the family Mytilidae, commonly known as the mussel family.
- This species is native to the South American Atlantic coast, especially in the Rio de la Plata region, which includes parts of Argentina, Uruguay, and southern Brazil.
- *Mytella charruana* is an important species in its ecosystem, providing food for various marine organisms and contributing to the biodiversity of coastal habitats. Like other mussels, it attaches itself to hard substrates using strong byssal threads, which it secretes to anchor itself.

- the potential for aquaculture of *Mytella charruana* comes with environmental considerations, as the introduction of mussels to new areas can sometimes lead to the disruption of local ecosystems, especially if the species becomes invasive.



# Topic- Salar de Olaroz



- **Salar de Olaroz is a salt flat located in the Jujuy province of Argentina, within the Puna region of the Andes.**
- **This area is part of the "Lithium Triangle," a region that spans across Argentina, Bolivia, and Chile and is known for its rich reserves of lithium.**
- **Lithium is a soft, silver-white metal that is highly reactive, and it is a key component in the manufacture of lithium-ion batteries, which are used in a variety of applications, including electric vehicles, portable electronics, and energy storage systems.**
- **The demand for lithium has been increasing rapidly due to the global shift towards renewable energy and the electrification of transportation.**

- **Salar de Olaroz, along with other salt flats in the region, contains brine pools that are rich in lithium.**
- **The process of extracting lithium from these brines typically involves pumping the brine to the surface, followed by a series of evaporation ponds where the water evaporates, concentrating the lithium and other minerals.**
- **Once the brine reaches a high enough concentration, the lithium is extracted through additional chemical processes to produce lithium carbonate or lithium hydroxide, which are the primary forms of lithium used in battery manufacturing.**



- **The lithium extraction process at Salar de Olaroz is conducted by companies that specialize in mining and processing lithium, such as Orocobre Limited and Toyota Tsusho Corporation, which have formed a partnership to develop the resources at the site.**
- **Environmental concerns and the management of water resources are critical issues in lithium extraction, especially in arid regions like the Puna.**
- **The mining industry and governments are working to develop sustainable practices to ensure that lithium extraction does not negatively impact local ecosystems and communities that rely on these areas for their livelihoods.**

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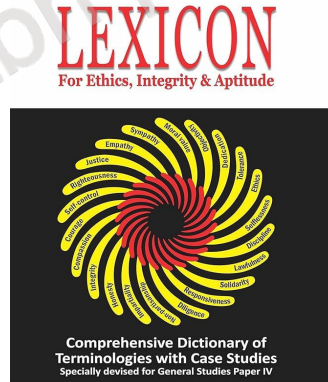
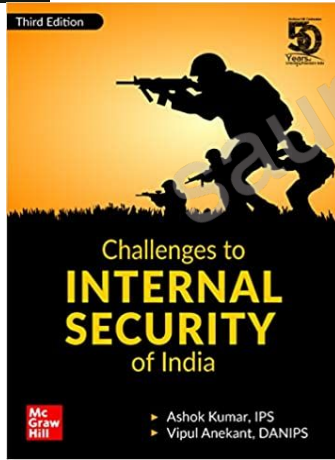
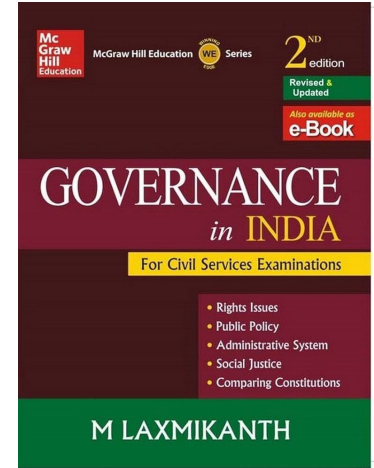
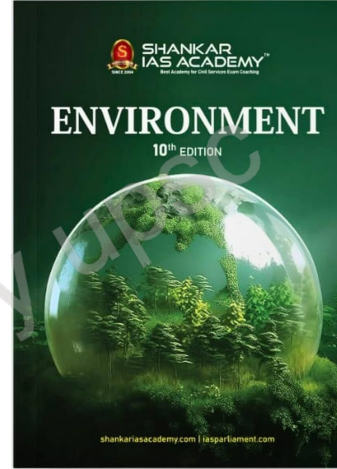
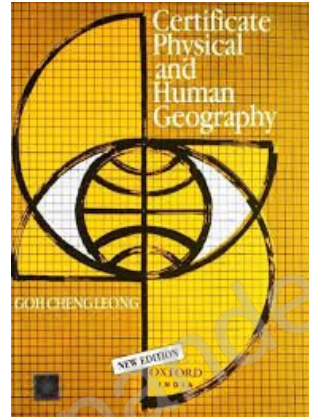
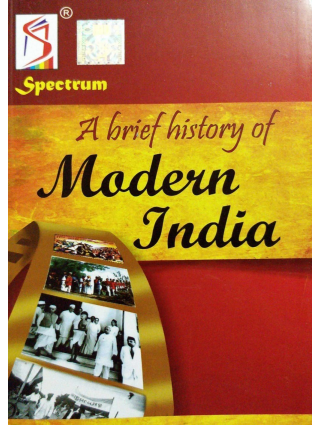
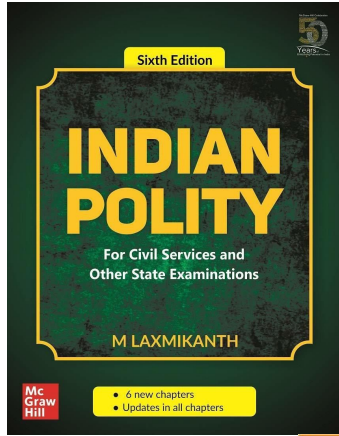
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