



Topics - MINDS MAPS included (Daily current affairs 19th & 18th December 2024)

- **Supreme court on sacred groves**
- **Esquel Meteorite:**
 - **The Supreme Court's Ruling on Section 6A of the Citizenship Act**
- **IR IN NEWS**
- **Coral Farming**
- **Mains**



By saurabh Pandey



THE HINDU

Target Mains -2025/26 -

Q → “Explain the role of coral farming in conserving marine biodiversity” Discuss.

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Q. Rabab recently seen in news is associated with which among the following. (PIB)

A) Folk dance

B) Martial Art form

C) Form of Puppetry

D) Musical instrument.

Formulate policy to manage sacred groves, SC tells govt.

Union Environment Ministry asked to develop plan for nationwide survey of groves, which are traditionally safeguarded by local communities, for its ecological value and cultural significance

Krishnadas Rajagopal
NEW DELHI

The Supreme Court on Wednesday directed the Centre to create a comprehensive policy for the management of sacred groves across the country.

Sacred groves are patches of trees traditionally protected by local communities for their religious and cultural significance. They also contribute to the conservation of the local biodiversity. These small forests are commonly found in Tamil Nadu, Kerala, Karnataka and Maharashtra. The recommendation by a Special Bench of Justices B.R. Gavai, S.V.N. Bhatti and Sandeep Mehta was based on a petition highlighting the vanishing groves of Rajasthan.

Significant move

The court's suggestion to the Centre to frame a policy is significant as the Centre has usually maintained that the manage-



Save biodiversity: These small forests are commonly found in Tamil Nadu, Kerala, Karnataka and Maharashtra. THULASI KAKKAT

ment of wildlife and its habitat is primarily the responsibility of the States. The Centre had noted that the Wild Life (Protection) Act, 1972, empowered States for declaration of any private or community land, as a community reserve, for protecting fauna, flora and traditional or cultural conservation values and practices.

However, the judgment aligned the preservation of sacred groves with the cultural and traditional rights of entire communities, while asking the Ministry of Environment, Forest

and Climate Change to spearhead the efforts to protect these precious sources of biodiversity.

The Ministry was asked to develop a plan for a nationwide survey of sacred groves. The court said the survey must identify the area and extent of the groves. It said the boundaries of the groves have to be clearly marked but left flexible to accommodate future growth of the forests. It said the Centre should provide instructions against the reduction of the groves.

Justice Mehta reminded

the Centre that the National Forest Policy of 1988, backed by the top court's interventions through the T.N. Godavarman Thirumulpad batch of cases, encouraged communities with customary rights to improve these forest patches on which they depend for their needs.

Village's efforts

The judgment narrated the story of Piplantri village in Rajasthan, where barren land was transformed to lush green groves due to the efforts of the people. "Piplantri village shows how a community-driven initiative came to effectively address social, ecological and environmental challenges in a cohesive manner," Justice Mehta underscored.

"Sacred groves have immense ecological value. Sacred groves should be identified and protected as community reserves to ensure their preservation against unauthorised land use changes," he observed.

Topic → Supreme court on sacred groves



Introduction

- **The Supreme Court of India has taken a monumental step by directing the Centre to create a comprehensive policy for managing sacred groves—vital ecosystems that hold immense cultural and ecological significance.**
- **These small forests, often preserved by local communities, represent a unique blend of nature and tradition.**
- **Their preservation not only supports biodiversity but also reflects the cultural heritage of various regions across the country.**

Significance of Sacred Groves

Sacred groves are patches of forest that are traditionally protected by local communities due to their religious and cultural importance. These groves serve multiple purposes:

Cultural Heritage: Sacred groves are often sites for worship and rituals, reflecting the spiritual connection communities have with nature.

Biodiversity Hotspots: They are crucial for conserving various species of flora and fauna, often acting as reservoirs of biodiversity.

Ecosystem Services: These groves provide essential services such as soil conservation, water retention, and climate regulation, contributing to the well-being of local communities.

The Supreme Court's Directive Explained

In a landmark ruling, the Supreme Court emphasized the need for a structured approach to protect these sacred groves. Key points from the directive include:

National Survey: The Ministry of Environment, Forest and Climate Change has been tasked with conducting a nationwide survey to identify and assess the extent of sacred groves.

Community Involvement: The court highlighted the importance of involving local communities in the conservation efforts, recognizing their traditional knowledge and practices.

Policy Development: The Centre is expected to develop a robust policy that not only protects these groves but also respects the cultural rights of the communities associated with them

Scientists are exploring what extraterrestrial life could look like

Advanced forms of life on alien planets could be so strange that they are unrecognisable. As astrobiologists try to detect life off earth, they will need to be creative. One strategy is to measure mineral signatures on the rocky surfaces of exoplanets, since mineral diversity tracks biological evolution

Chris Impey

We have only one example of biology forming in the universe: life on earth. But what if life can form in other ways? How do you look for alien life when you don't know what alien life might look like?

These questions are preoccupying astrobiologists, who are scientists who look for life beyond earth. Astrobiologists have attempted to come up with universal rules that govern the emergence of complex physical and biological systems both on earth and beyond.

I'm an astronomer who has written extensively about astrobology. Through my research, I've learned that the most abundant form of extraterrestrial life is likely to be microbial, since single cells can form more readily than large organisms. But just in case there's advanced alien life out there, I'm on the international advisory council for the group designing messages to send to those civilisations.

Detecting life beyond earth

Since the first discovery of an exoplanet in 1995, over 5,000 exoplanets, or planets orbiting other stars, have been found. Many of these exoplanets are small and rocky, like earth, and in the habitable zones of their stars. The habitable zone is the range of distances between the surface of a planet and the star it orbits that would allow the planet to have liquid water, and thus support life as we on earth know it.

The sample of exoplanets detected so far projects 300 million potential biological experiments in our galaxy – or 300 million places, including exoplanets and other bodies such as moons, with suitable conditions for biology to arise. The uncertainty for researchers starts with the definition of life. It feels like defining life should be easy, since we know life when we see it, whether it's a flying bird or a microbe moving in a drop of water. But scientists don't agree on a definition, and some think a comprehensive definition might not be possible.

NASA defines life as a "self-sustaining chemical reaction capable of Darwinian evolution." That means organisms with a complex chemical system that evolve by adapting to their environment. Darwinian evolution says that the survival of an organism depends on its fitness in its environment. The evolution of life on earth has progressed over billions of years from single-celled organisms to large animals and other species, including humans. Evolution is the process of change in systems. It can describe how a group of something becomes more complex - or even just different - over time.

Exoplanets are remote and hundreds of millions of times fainter than their parent stars, so studying them is challenging. Astronomers can inspect the atmospheres and surfaces of earth-like exoplanets using a method called spectroscopy to look for chemical signatures of life. Spectroscopy might detect signatures of oxygen in a planet's atmosphere, which microbes called blue-green algae created by photosynthesis on earth several billion years ago, or chlorophyll signatures, which indicate plant life. NASA's



A slice of the Equeul meteorite. This type of meteorite is from the core-mantle boundary of an ancient planetoid that was smashed apart billions of years ago. DOUG BOUMANN

definition of life leads to some important but unanswered questions. Is Darwinian evolution universal? What chemical reactions can lead to biology off earth?

Evolution and complexity

All life on earth, from a fungal spore to a blue whale, evolved from a microbial last common ancestor about 4 billion years ago. The same chemical processes are seen in all living organisms on earth, and those processes might be universal. They also may be radically different elsewhere. In October 2024, a diverse group of scientists gathered to think outside the box on evolution. They wanted to step back and explore what sort of processes created order in the universe – biological or not – to figure out how to study the emergence of life totally unlike life on earth. Two researchers present argued that complex systems of chemicals or minerals, when in environments that allow some configurations to persist better than others, evolve to store larger amounts of information. As time goes by, the system will grow more diverse and complex, gaining the functions needed for survival through a kind of natural selection.

They speculated that there might be a law to describe the evolution of a wide variety of physical systems. Biological evolution through natural selection would be just one example of this broader law. In biology, information refers to the instructions stored in the sequence of nucleotides on a DNA molecule, which collectively make up an organism's genome and dictate what the organism looks like and how it functions. If you define complexity in terms of information theory, natural selection will cause a genome to grow more complex as it stores more information about its environment.

Complexity might be useful in

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measuring the boundary between life and nonlife. However, it's wrong to conclude that animals are more complex than microbes. Biological information increases with genome size, but evolutionary information density drops. Evolutionary information density is the fraction of functional genes within the genome, or the fraction of the total genetic material that expresses fitness for the environment. Organisms that people think of as primitive, such as bacteria, have genomes with high information density and so appear better designed than the genomes of plants or animals. A universal theory of life is still elusive. Such a theory would include the concepts of complexity and information storage, but it would not be tied to DNA or the particular kinds of cells we find in terrestrial biology.

Implications for search for life

Researchers have explored alternatives to terrestrial biochemistry. All known living organisms, from bacteria to humans, contain water, and it is a solvent that is essential for life on earth. A solvent is a liquid medium that facilitates chemical reactions from which life could emerge. But life could potentially emerge from other solvents, too. Astrobiologists William Bains and Sara Seager have explored thousands of molecules that might be associated with life. Plausible solvents include sulfuric acid, ammonia,

liquid carbon dioxide, and even liquid sulphur. Alien life might not be based on carbon, which forms the backbone of all life's essential molecules – at least here on Earth. It might not even need a planet to survive.

Advanced forms of life on alien planets could be so strange that they're unrecognisable. As astrobiologists try to detect life off earth, they'll need to be creative. One strategy is to measure mineral signatures on the rocky surfaces of exoplanets, since mineral diversity tracks terrestrial biological evolution. As life evolved on earth, it used and created minerals for exoskeletons and habitats. The hundred minerals present when life first formed have grown to about 5,000 today. For example, zircons are simple silicate crystals that date back to the time before life started. A zircon found in Australia is the oldest known piece of earth's crust. But other minerals, such as apatite, a complex calcium phosphate mineral, are created by biology. Apatite is a primary ingredient in bones, teeth, and hair scales.

Another strategy to finding life unlike that on earth is to detect evidence of a civilisation, such as artificial lights or the industrial pollutant nitrogen dioxide in the atmosphere. These are examples of traces of intelligent life called technosignatures. It's unclear how and when a first detection of life beyond earth will happen. It might be within the solar system, or by sniffing exoplanet atmospheres, or by detecting artificial radio signals from a distant civilisation.

The search is a twisting road, not a straightforward path. And that's for life as we know it – for life as we don't know it, all bets are off.


(Chris Impey is University Distinguished Professor of Astronomy, University of Arizona. This article is republished from The Conversation.)



Topic → Esquel Meteorite: A Cosmic Treasure



Introduction to the Esquel Meteorite

The Esquel meteorite is not just a rock from outer space; it's an extraordinary testament to the wonders of our universe. Discovered in Argentina in 1951, this meteorite has captivated scientists and collectors alike with its unique attributes and rich history. 

Location: Found in Esquel, a region known for its stunning landscapes and rich geological history.

Type: Classified as a pallasite, it features a mesmerizing blend of metal and olivine crystals.

Historical Context: Its discovery has provided insights into the formation of the solar system and the processes that govern celestial bodies



The Origins of the Esquel Meteorite

The journey of the Esquel meteorite began in the vastness of space. It is believed to have originated from the asteroid belt between Mars and Jupiter. Here's a glimpse into its cosmic journey:


Formation: The meteorite is thought to be remnants of a larger asteroid that underwent differentiation, leading to the formation of its unique structure.

Impact: It traveled through the cosmos for millions of years before entering Earth's atmosphere, where it survived the fiery descent. 🌠

Discovery: Found by a farmer in the early 1950s, it quickly garnered attention from meteorite enthusiasts and scientists

Characteristics and Composition

What sets the Esquel meteorite apart? Its unique characteristics and intricate composition tell a fascinating story of the cosmos.

Visual Appeal: The meteorite is adorned with translucent olivine crystals, offering a stunning display reminiscent of jewels. 

Metallic Matrix: Composed primarily of nickel-iron, it reflects the complex processes involved in its formation.

Size: Weighing in at approximately 7.3 kilograms, this meteorite is one of the largest pallasites ever found.

Conclusion

The Esquel meteorite is more than just a cosmic rock; it's a bridge to our past, offering glimpses into the formation of our solar system and the dynamic processes at play in the universe. Whether you're a seasoned collector or a curious enthusiast, the allure of the Esquel meteorite is undeniable



Formulate policy to manage sacred groves, SC tells govt.

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"Sacred groves have immense ecological value. Sacred groves should be identified and protected as community reserves to ensure their preservation against unauthorised land use changes," he observed.

Topic → The Supreme Court's Ruling on Section 6A of the Citizenship Act



Introduction

In October 2024, the Supreme Court of India delivered a landmark 4:1 ruling that upheld the constitutional validity of Section 6A of the Citizenship Act, 1955.

This provision is particularly significant as it establishes a framework for migrants from the former East Pakistan (now Bangladesh) who settled in Assam, allowing them to acquire Indian citizenship if they arrived before March 25, 1971.

Background of Section 6A

The Assam Accord

. This provision was introduced in 1985 following the Assam Accord, an agreement between the Government of India and the leaders of the Assam Movement.

The movement arose due to concerns about the influx of migrants from East Pakistan into Assam, which threatened local culture, economic stability, and political balance.



Historical Context of Migration

The Assam Accord aimed to address these issues by setting specific cut-off dates for granting citizenship to migrants. Those who migrated before January 1, 1966, were declared Indian citizens, while those who arrived between January 1, 1966, and March 25, 1971, could apply for citizenship after ten years of residence. Anyone arriving after March 25, 1971, was deemed an illegal migrant.

The Supreme Court's Majority Ruling

Key Points of the Judgment

The Supreme Court's ruling has been met with mixed reactions. The majority opinion emphasized that the law was not unconstitutional and that it was necessary to address the unique demographic challenges faced by Assam.



Chief Justice D.Y. Chandrachud's Reasoning

Chief Justice D.Y. Chandrachud justified the decision by stating that while other states share larger borders with Bangladesh, the impact of migration on Assam's cultural and political rights is more pronounced.

Constitutional Violations in the Ruling

Article 14 and Its Implications

One of the major criticisms of the ruling is its handling of Article 14, which guarantees equality before the law. The judgment seems to suggest that the unique circumstances of Assam justify differential treatment, raising questions about fairness and equality

Article 29 and Cultural Rights

The Court's interpretation of Article 29, which protects the cultural and linguistic identities of distinct groups, has also come under scrutiny. The ruling stated that the influx of migrants did not infringe upon the Assamese people's ability to conserve their culture.

Gaps in the Court's Reasoning

Cultural and Linguistic Displacement

The Court's reasoning fails to acknowledge the significant demographic shifts that have occurred in Assam. Research indicates that the Bengali-speaking population has increased dramatically, while the proportion of Assamese speakers has declined. This shift is not merely a coexistence of cultures but represents a serious threat to the Assamese identity.



The Mechanism of Section 6A

Flaws in the Identification Process

The mechanism for identifying migrants under Section 6A is fundamentally flawed. It places the burden of proof on the state without providing a means for voluntary self-identification by migrants. This creates a convoluted process that can lead to confusion and injustice.

Impact on the Foreigners' Tribunal

The foreigners' tribunal, responsible for determining citizenship status, is overwhelmed with cases. This backlog not only slows down the process but also complicates the situation for individuals who may not even qualify under Section 6A.

Potential Negative Implications of the Ruling

it poses a threat to the cultural fabric of Assam and raises concerns about the future of citizenship laws in India. The decision could set a precedent for further erosion of cultural rights and identity.

Conclusion

The Supreme Court's ruling on Section 6A of the Citizenship Act is a complex issue that warrants careful consideration.

While it aims to address the unique challenges faced by Assam, it also raises significant constitutional concerns that cannot be overlooked.



Why were Romanian polls annulled?

What prompted the constitutional court to declare the European nation's presidential polls invalid? Who is Calin Georgescu and what has been his role in the elections? What are the allegations levelled against Russia and has the country faced similar accusations in the past in the region?

EXPLAINER

Garimella Subramaniam

The story so far:-

In an unprecedented ruling on December 6, Romania's constitutional court unanimously annulled the country's presidential elections, two days before the run-off ballot, amid allegations of Russian interference. Suspicions of foul play were fuelled when Calin Georgescu emerged frontrunner, securing 22.9% of the vote, after the first round of polling on November 24. A professor of environmental sciences who fought as an independent and had polled in single digits until then, Mr. Georgescu is an ex-honorary member of the far-right Alliance for the Union of Romanians (AUR) party. He has been portrayed as an admirer of Russian President Vladimir Putin, and a critic of Romania's membership of the North Atlantic Treaty Organization (NATO) and the European Union (EU). Mr. Georgescu was even suggested as the Prime Minister candidate by the AUR party, which came second in the legislative elections of December 1.

The Constitutional Court in Bucharest had ordered a recount in response to complaints by two of the contestants who were eliminated in the first round. Once the exercise confirmed the previous tally, the judges had given the go ahead for the knock-out round on December 8. However, the unfolding dramatic turn of events prompted the court to call off the elections altogether, concluding that the process was marred by multiple irregularities.

How serious are the allegations?

Days before the aborted run-off, Romania's National Security Council declassified troves of documents from the Interior Ministry, detailing how the country had been a target of Russian cybercrimes, information leaks and sabotage. It said some 800 TikTok



Calin Georgescu has been portrayed as an admirer of Vladimir Putin and a critic of Romania's membership of NATO and the EU.AFP

accounts created in 2016 were activated in support of Mr. Georgescu a month before the ballot and thousands closer to the polling date. More than 100 paid influencers with a few million followers were deployed to boost Mr. Georgescu's prospects. Romania's secret service (SRI) has claimed it has identified thousands of cyberattacks originating from Russian platforms, which routed their operations from several countries, and distorted the information presented to the public. The agency singled out Mr. Georgescu, who had claimed that he had no access to campaign funds, as having received preferential treatment from TikTok, because the platform owned by ByteDance did not label his video posts as political advertisement. TikTok has denied any wrongdoing and taken down thousands of disputed posts and promised full cooperation with the authorities. Telegram and Discord are the other channels Romanian authorities have blamed for involvement in these covert and coordinated operations.

What is the status of the probe?

In a complaint filed with the EU regulator, Romania's media watchdog has alleged that TikTok's algorithms amplified Mr. Georgescu's content to the disadvantage of other candidates. Subject to available evidence, the commission could investigate the Chinese social media platform for potential violations under the EU's Digital Services Act (DSA). The law stipulates content moderation obligations on large online platforms to mitigate systemic risks, including the electoral processes and imposes penalties of up to 6% of global annual turnover. TikTok has already been served an order under the DSA to preserve for scrutiny all its data relating to European elections.

What explains Georgescu's appeal?

The TikTok messenger that spectacularly propelled his victory does not detract from the resonance of Mr. Georgescu's ultra-nationalist message among an electorate disenchanted with the dominance of the mainstream Social

Democratic Party and the National Liberal Party since the fall of communism. High inflation, a ballooning fiscal deficit and balance of payments challenges, not to mention rampant corruption in high places and contempt for the rule of law, have been weaponised by populist and extremist groups to peddle propaganda and conspiracy theories.

How widespread are concerns of Russian meddling in the region?

From orchestrating a so-called hybrid warfare of spreading disinformation, cyberattacks and sabotage, to paying off pro-Russian MEPs (Members of the European Parliament), Moscow's controversial role came into sharp focus during the European parliament elections in June.

In response, Belgium and the Czech Republic coordinated investigations that led, among other actions, Prague to impose sanctions on an oligarch close to Mr. Putin for promoting a pro-Russia narrative via Voice of Europe website, which has since been taken down.

While a German MP from the Alternative for Germany (AfD) party is under a probe for receiving money from a pro-Russia campaign, the Belgian government in April passed legislation to criminalise foreign interference in the political process.

In Moldova, the fragile post-Soviet republic, Moscow is accused of plotting to destabilise the pro-EU government, and interference in President Maia Sandu's re-election and the referendum on EU accession in October.

What next?

While a re-run of the presidential contest is expected next year, the Mayor of Bucharest has thrown his hat in the ring. The ultra-nationalist Mr. Georgescu has vowed to challenge the decision in the Supreme Court. Romanian tax authorities have launched financial investigations against the social influencers behind Georgescu's campaign, some of whom have since fled the country.

THE GIST


▼ Romania's presidential elections were annulled amid allegations of Russian interference


▼ Suspicions of foul play were alleged after Calin Georgescu from the political fringe emerged frontrunner, securing 22.9% of the vote, after the first round of polling on November 24


▼ In a complaint filed with the EU regulator, Romania's media watchdog has alleged that TikTok's algorithms amplified Mr. Georgescu's content to the disadvantage of other candidates

Romania's Presidential Election Annulment

Key Events and Figures

 **Unprecedented Ruling:** On December 6, Romania's constitutional court annulled the presidential elections just two days before the runoff.

 **Allegations of Interference:** The annulment was amid allegations of Russian interference in the electoral process.

 **Frontrunner Emerges:** Calin Georgescu, an independent candidate, emerged as the frontrunner with 22.9% of the vote after the first round on November 24.

🎓 **Background of Georgescu:** Georgescu is a professor of environmental sciences and an ex-honorary member of the far-right AUR party, known for his pro-Russian sentiments.

❌ **Court's Decision:** The court initially ordered a recount due to complaints but later decided to cancel the elections entirely due to multiple irregularities.

📅 **Legislative Context:** The AUR party, which suggested Georgescu as a Prime Minister candidate, came second in the legislative elections held on December 1.

🌐 **Criticism of Alliances:** Georgescu is a critic of Romania's NATO and EU memberships, aligning with his far-right political views.

Summary

Romania's constitutional court annulled the presidential elections amid allegations of Russian interference, with frontrunner Calin Georgescu facing scrutiny for his political affiliations and views

BIG SHOT




Jesus Alvarado of the Pilares Marino Foundation holds a structure with tiny coral pieces to create a coral farm in a project with Venezuela's government to repopulate reefs and diminish the effects of global warming, in Santo Domingo, Venezuela. REUTERS

Topic → Cultivating the Future: The Importance of Coral Farming



Introduction

Coral reefs are the vibrant cities of the ocean, teeming with life and biodiversity.

 Unfortunately, they are under siege from various environmental threats, making coral farming an essential practice for their survival.

Coral farming involves cultivating corals in a controlled environment, which can then be used to restore and replenish damaged reefs.

Let's delve into the techniques, impacts, challenges, and future of coral farming.

Coral Farming Techniques



Coral farming employs several innovative techniques to propagate and grow corals effectively. Here are some of the popular methods:

Fragmentation: This is the most common method, where small fragments of coral are broken off and placed in a nursery to grow. This technique allows for rapid reproduction.

Larval Reseeding: Scientists collect coral larvae and introduce them to suitable substrates, promoting natural settlement and growth. This method helps in restoring natural reefs more effectively.

Robotic Assistance: Recent advancements have seen the introduction of robotic hands designed to assist in coral planting and maintenance. These robotic innovations can work in harsh underwater conditions, enhancing efficiency.

Innovative Technologies: The integration of drone technology for monitoring coral health and underwater sensors for data collection has revolutionized coral farming. These tools provide vital information that enables better decision-making and management practices.



Impact on Marine Ecosystems

Coral farming plays a significant role in bolstering marine ecosystems. Here's how:

Biodiversity Restoration: By providing an environment for various marine species, coral farms support the restoration of biodiversity in areas where coral reefs have been damaged.

Protection Against Erosion: Healthy coral reefs act as natural barriers against storm surges and coastal erosion, safeguarding coastal communities.

Carbon Sequestration: Coral reefs contribute to carbon sequestration, helping to mitigate climate change by absorbing CO₂ from the atmosphere.

Economic Benefits: Coral farming can provide livelihoods for local communities through eco-tourism and sustainable fishing practices.

Q. Rabab recently seen in news is associated with which among the following. (PIB)

A) Folk dance

B) Martial Art form

C) Form of Puppetry

D) Musical instrument.

Ans: D

The rubab is the national musical instrument of Afghanistan.

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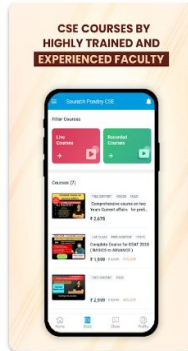
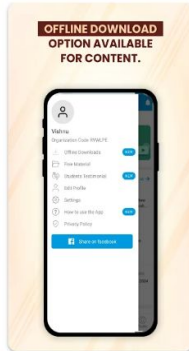
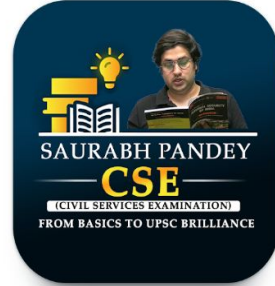
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