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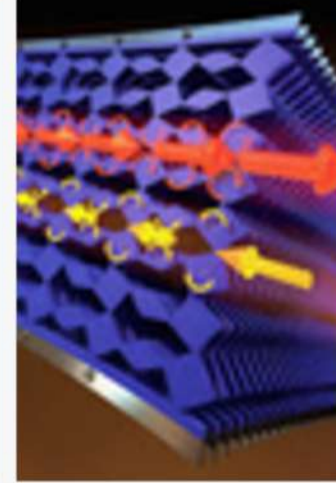
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Gold rush

ETF-driven rise in gold demand needs watching

PIL has become 'paisa interest litigation': top court judge

Public Interest Litigation (PIL) has emerged as a powerful instrument of political and social empowerment in India, enabling citizens, civil society groups, and activists to directly access the Supreme Court of India and High Courts to seek enforcement of fundamental rights, especially for marginalised and voiceless sections. By relaxing locus standi and expanding the scope of Articles 32 and 226, PIL has transformed the judiciary into an active participant in governance, addressing issues ranging from environmental protection to human rights and institutional accountability. However, recent observations by B. V. Nagarathna highlight a concerning shift, with PIL increasingly being misused as a tool for private, political, or publicity-driven motives, thereby burdening courts and diluting its original purpose. This tension underscores the evolving challenge of preserving PIL as a mechanism for genuine public interest while preventing its erosion into a vehicle for motivated litigation.

(Read the full report on Page 2)

PIL has become 'paisa interest litigation': top court judge

Public Interest Litigation (PIL) is a unique judicial innovation in India that allows individuals or organisations to approach courts on behalf of those whose rights are violated but who lack the means to seek justice. Rooted in Articles 32 and 226 of the Constitution, PIL empowers the Supreme Court of India and High Courts to enforce fundamental rights. It reflects the constitutional commitment to justice, equality, and access to remedies, particularly for marginalised sections.

Evolution and Judicial Expansion

PIL emerged in the post-Emergency period of the 1980s, led by judges like P. N. Bhagwati and V. R. Krishna Iyer, who relaxed the traditional rule of locus standi. Landmark cases such as *Hussainara Khatoon v. State of Bihar* expanded Article 21 to include the right to a speedy trial, while *S. P. Gupta v. Union of India* firmly established the principle that any public-spirited individual can seek justice for affected groups. Over time, PIL became a key instrument of judicial activism and participatory justice.

Significance in Governance and Social Justice

PIL has played a transformative role in addressing systemic issues such as bonded labour, environmental degradation, prison reforms, and gender justice. It enables courts to intervene in matters affecting large sections of society and ensures accountability of the executive. By allowing even letters or media reports to trigger judicial action, PIL has made the judiciary more accessible and responsive to public concerns.

Public Interest Litigation remains a cornerstone of India's constitutional framework, bridging the gap between law and social justice. While concerns over misuse are valid, the solution lies in reforming and refining the mechanism rather than curtailing it. Ensuring that PIL retains its original purpose—protecting the rights of the voiceless—remains essential for a vibrant and accountable democracy.



Recent Supreme Court Concerns on Misuse

However, recent observations by B. V. Nagarathna highlight growing concerns over the misuse of PIL. The Court noted that many petitions today are driven by "private interest", "publicity interest", or even political motives, rather than genuine public welfare. In the context of the Sabarimala case review, the Court questioned the locus standi of petitioners and emphasised the distinction between bona fide litigants and "meddlesome interlopers".

Key Issues and Challenges

The misuse of PILs has several implications. Frivolous petitions burden the judiciary, delay genuine cases involving fundamental rights, and dilute the credibility of this important mechanism. Political or ideological use of PILs can distort judicial processes and divert attention from pressing social issues. At the same time, completely restricting PIL risks undermining access to justice for vulnerable groups.

Balancing Access and Accountability

The challenge before the judiciary is to strike a balance between openness and restraint. While PIL must remain accessible to ensure social justice, safeguards such as stricter scrutiny of intent, imposition of costs for frivolous petitions, and clearer guidelines on locus standi are necessary. Courts have increasingly emphasised the need to preserve PIL as a tool for genuine public interest rather than personal or political gain.

Silencing academia, weakening democratic space

Academic freedom refers to the autonomy of scholars, students, and institutions to teach, learn, and conduct research without undue political or ideological interference. It is closely linked to constitutional guarantees such as freedom of speech and expression under Article 19(1)(a). In democratic systems, universities function as critical spaces for inquiry, debate, and innovation, enabling evidence-based policymaking and informed public discourse.

Recent Global Assessments and Trends

Recent international assessments highlight concerns regarding academic and democratic freedoms. The Varieties of Democracy (V-Dem) Report 2026 classifies India as an “electoral autocracy” and notes a decline in indicators such as free expression, media independence, and civil society space. Similarly, the Scholars at Risk Free to Think Report 2024 categorises India as having “completely restricted” academic freedom, citing constraints on university autonomy and intellectual dissent. These findings align with broader global indices like Freedom House Report, which track trends in civil liberties and institutional independence.

Key Issues Affecting Academic Freedom

Restrictions on academic freedom can weaken democratic discourse by limiting critical inquiry and intellectual diversity. Political interference, censorship pressures, and punitive actions against scholars or students create a chilling effect, discouraging open debate and independent research. Instances of disrupted academic events, regulatory pressures, and self-censorship further reduce the space for dissent. Such trends indicate that certain ideas or areas of research may become constrained, affecting the overall knowledge ecosystem.

The weakening of academic freedom can gradually erode democratic values such as liberty, pluralism, and freedom of expression. When spaces for debate and dissent shrink, the capacity of society to question authority and engage in informed decision-making diminishes. Over time, this can affect the quality of governance, public trust, and institutional credibility. Strengthening academic freedom is therefore essential not only for educational progress but also for sustaining a vibrant and resilient democracy.



Institutional and Governance Concerns

Universities and civil society institutions play a vital role in sustaining democratic accountability. However, concerns have been raised regarding:

- Reduced institutional autonomy due to regulatory or administrative pressures
- Limited effectiveness of internal oversight mechanisms
- Increasing centralisation in governance frameworks

These developments can weaken the ability of academic institutions to function as independent centres of thought and reduce their contribution to policy research and social reform.

Link with Constitutional and Legal Framework

India’s constitutional framework strongly supports civil liberties through Articles 14, 19, and 21. At the international level, India is a signatory to the International Covenant on Civil and Political Rights, which emphasises rights such as free expression and participation. However, institutional practices and policy frameworks play a crucial role in translating these guarantees into reality. Academic spaces, when functioning freely, reinforce these constitutional values by promoting pluralism, debate, and critical engagement.

Scientists build metamaterial that can 'learn' to change shape

Metamaterials are artificially engineered materials whose properties depend not just on their chemical composition but on their internal structure and geometric arrangement at micro- or nanoscale levels. Unlike conventional materials, they can manipulate physical phenomena such as electromagnetic waves in unconventional ways. This **structural control** allows them to **exhibit properties not found in nature**, such as bending light in unusual directions or altering optical responses.

Key Scientific Development: "Learning" Metamaterials

A recent breakthrough demonstrates that metamaterials can exhibit physical learning, blurring the distinction between living and non-living systems. Researchers developed a chain-like robotic metamaterial composed of interconnected units equipped with sensors, motors, and microcontrollers.

- Each unit adjusts its stiffness based on local feedback.
- Through repeated interactions (**contrastive learning**), the system "learns" to adopt specific shapes.
- Unlike static materials, these systems can adapt, forget, and relearn configurations, mimicking biological adaptability.

This marks a shift from passive materials to adaptive, responsive systems.

Mechanism of Physical Learning

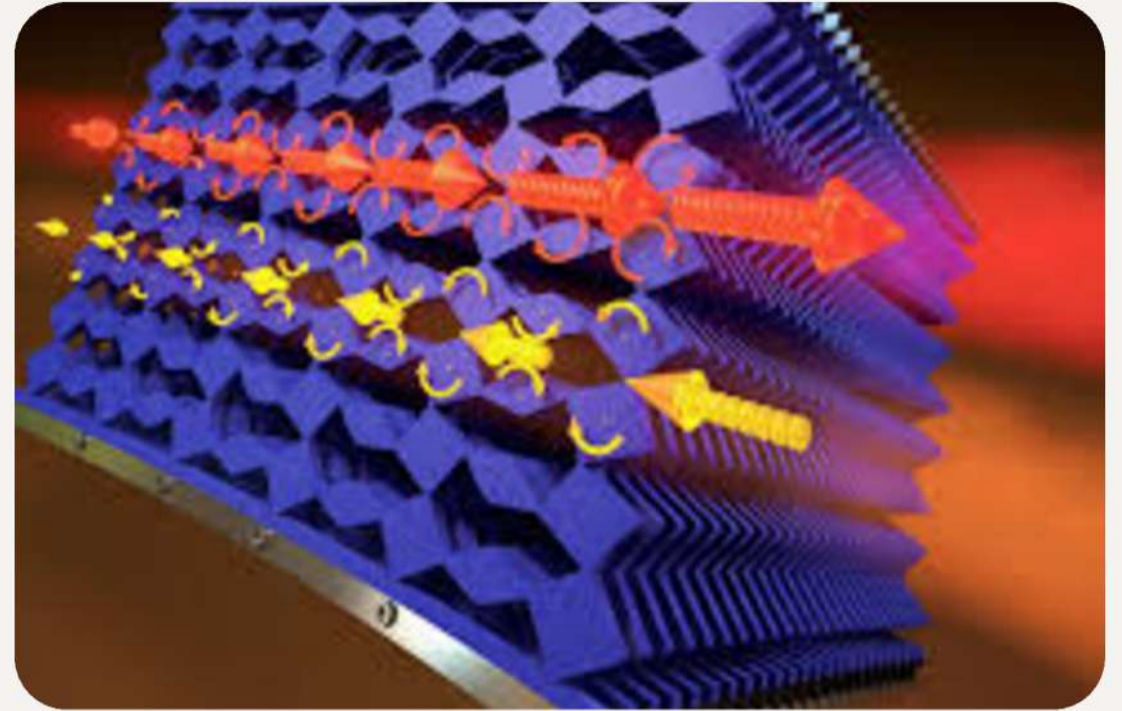
The learning process is based on iterative comparison between two states:

Free state: natural deformation after an external input

Clamped state: desired target shape manually imposed

Each unit compares these states and adjusts its internal stiffness accordingly. Over time, the system reduces the number of steps required to achieve the target shape. Here, learning is decentralised, relying only on local interactions rather than a central controller.

Metamaterials represent a paradigm shift from static to intelligent, adaptive materials. The emergence of physically learning systems challenges traditional boundaries between living and non-living matter, offering vast potential in technology and engineering. With continued advancements, they could redefine how materials interact with environments, paving the way for innovations in smart infrastructure, healthcare, and robotics.



Unique Properties and Behaviour

Metamaterials in this study display several advanced features:

Adaptability: Can transition between rigid and flexible states

Non-reciprocity: Respond differently depending on direction of input

Multistability: Ability to maintain multiple stable configurations

Bistability: Certain units act like switches, enabling gripping or release actions

Unlike traditional systems that minimise energy, these materials optimise work done, allowing multiple pathways to achieve a result.

Emerging Applications

Metamaterials hold transformative potential across sectors:

Optics & Imaging: Ultra-thin lenses, enhanced imaging (e.g., medical diagnostics via smartphones)

Robotics: Soft robots capable of adaptive movement and object manipulation

Healthcare: Advanced prosthetics that respond dynamically to stimuli

Disaster Mitigation: Materials that can absorb shocks (e.g., earthquake-resistant structures)

Stealth & Defence: Radar invisibility and electromagnetic control

The integration of sensing, computation, and actuation makes them key to next-generation smart systems.

The Indian EXPRESS

Weakening rupee points to challenges ahead

The persistent depreciation of the Indian rupee, falling by over 5% in 2026 and continuing last year's decline, reflects underlying macroeconomic pressures on both current and capital accounts. Elevated global crude oil prices are widening the current account deficit, which may reach around 2% of GDP, while capital outflows through sustained foreign portfolio investor withdrawals keeps weakening external financing. Although the RBI has intervened to stabilise the currency, pressures persist. At the same time, the government's reluctance to fully pass on higher fuel costs to consumers limits immediate inflation but creates fiscal and corporate stress, especially for oil marketing companies. Gradual adjustments, such as the hike in commercial LPG, are already feeding into inflationary pressures. A prolonged geopolitical crisis risks further weakening the rupee, increasing inflation, and dampening growth, thereby complicating macroeconomic management.

Editorial to Exam - Most probable question from this editorial

"The recent depreciation of the Indian rupee reflects structural vulnerabilities in both the current and capital accounts."

Discuss the factors contributing to the weakening of the rupee in the present global context. Also examine its implications for inflation, growth, and macroeconomic stability, and suggest policy measures to manage such external sector pressures.



Building Bridges

India's record peak power demand of 256.1 GW, with solar contributing a historic 21.5% of afternoon load, highlights the growing strength of its renewable capacity. However, the overall daily contribution of solar remains modest at 10.8%, dropping during evening hours, exposing the intermittency challenge. Despite solar capacity nearly doubling to 28% of installed capacity by 2026, its share in actual generation has not kept pace, revealing a critical gap between capacity addition and effective utilisation. The core constraint lies not in generation but in inadequate battery storage infrastructure, leading to large-scale curtailment of solar power and fiscal losses due to compensation for unused energy. This inefficiency becomes more concerning amid rising temperatures and a forecast of below-normal monsoon, which will increase daytime electricity demand. Although falling battery storage costs offer a promising pathway, deployment remains slow. Bridging this gap requires policy focus on integrating storage with solar expansion, improving financing, and ensuring timely commissioning.

Editorial to Exam - Most probable question from this editorial

"India's rapid expansion of solar capacity has not translated into proportional gains in reliable electricity supply."

Examine the role of energy storage in addressing this gap. Discuss the economic and policy challenges involved, and evaluate its significance for India's energy transition and grid stability.

thehindu**businessline.**

TUESDAY - MARCH 31, 2026

Gold Rush

Rising gold prices in India are no longer dampening demand. Instead, they are coinciding with increased purchases, signalling a structural shift in consumption patterns. In Q1 2026, despite an 81% year-on-year price surge, gold demand rose by 10% in volume and 88% in value, driven primarily by investors rather than traditional jewellery buyers. Investment demand in the form of bars, coins, and ETFs presently constitutes over half of total demand, reflecting gold's growing role as a financial hedge against market volatility, inflation, currency depreciation, and geopolitical risks. This trend poses macroeconomic concerns, as India relies heavily on imports for gold, potentially widening the trade deficit and increasing foreign exchange outflows, while locking household savings outside the productive financial system. Reviving gold monetisation emerges as a viable solution that can mobilise the vast domestic gold stockpile through incentivised deposit schemes. Such measures can reduce import dependence, enhance financial intermediation, and balance household portfolio preferences with macroeconomic stability.

Editorial to Exam - Most probable question from this editorial

"India is witnessing a structural shift in gold demand, with investment-driven purchases rising even amid soaring prices."

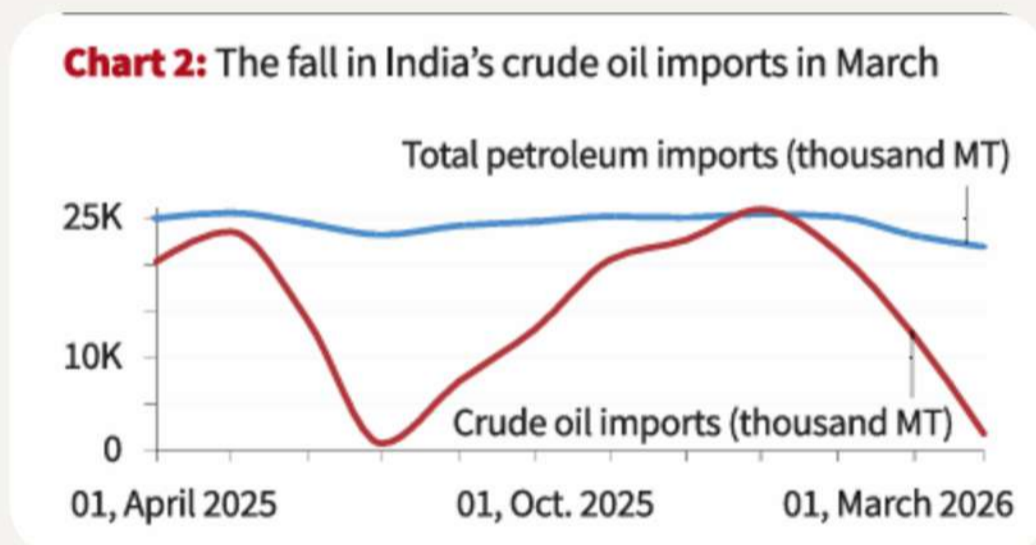
Discuss the implications of this trend for India's macroeconomic stability in terms of trade balance, financial savings, and policy challenges. Suggest measures to address the emerging concerns.

RE meets global electricity demand for the first time

In 2025, global electricity generation increased by about 850 TWh, and notably, this entire rise in demand was met by renewable energy sources. Solar and wind alone contributed the bulk of this increase, marking the first time in decades that fossil fuels were not required to meet additional electricity needs. This represents a structural shift from earlier patterns where rising demand always led to increased fossil fuel use.

Declining Role of Fossil Fuels

Coal and oil-based electricity generation declined in absolute terms, while their share in the global energy mix also reduced. This reversal is significant because, for over two decades, fossil fuel use continued to grow despite expansion in renewables. The falling costs of solar and wind energy, along with improvements in storage and grid integration, have made renewables more competitive and reliable.

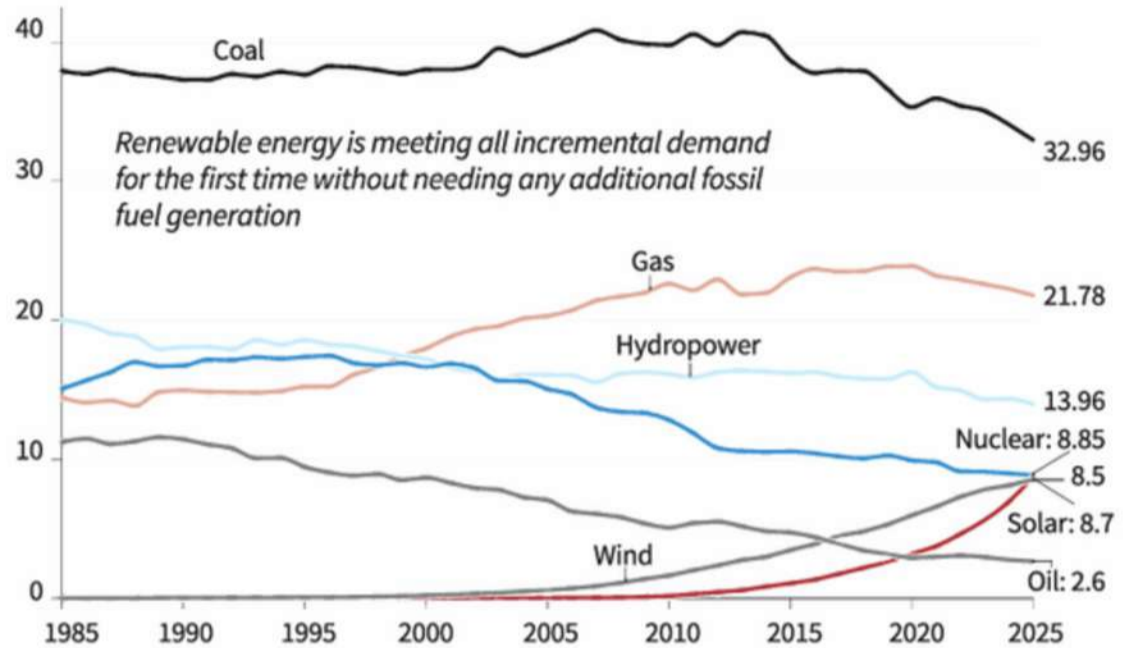


Role of Major Economies

Large economies have played a key role in this transition. China witnessed a decline in fossil fuel generation for the first time in nearly a decade, with clean energy meeting most of its rising demand. India also recorded a decline in fossil fuel-based generation. Together, these trends contributed to a stagnation in global fossil fuel demand, reinforcing the momentum of the energy transition.

India's energy transition must balance rapid renewable expansion with strengthening energy security. This includes diversifying import sources, investing in storage technologies, improving grid infrastructure, and enhancing domestic production. A coordinated approach can ensure that clean energy growth not only meets future demand but also reduces vulnerability to external shocks.

Chart 1: The shift towards renewables for global electricity generation, with an uptick in solar and wind energy (Figures in %)



India's Renewable Growth Story

India has made significant progress in expanding renewable energy capacity, which has grown by over 200% in the past decade. A large share of new power capacity additions now comes from renewables, reflecting strong policy support and investment. This positions India as one of the fastest-growing renewable energy markets globally.

Persistent Import Dependence and Vulnerability

Despite this progress, India remains heavily dependent on imported fossil fuels, including crude oil, natural gas, and LPG. A major portion of these imports comes from West Asia, making the country vulnerable to geopolitical disruptions. Events such as the closure of the Strait of Hormuz in 2026 exposed this vulnerability, leading to sharp increases in oil prices and supply uncertainties.

Energy Security vs Energy Transition

The Indian experience highlights a key challenge: renewable capacity expansion does not immediately translate into energy security. Renewable projects take time to become operational and require support systems such as storage and transmission. In the short term, India still relies on coal, gas, and imports to meet sudden supply shocks and rising demand.

Cabinet approves two more semicon units worth 3,900 crore

The Union Cabinet's approval of two new semiconductor units—by Crystal Matrix Ltd and Suchi Semicon—marks a significant step in strengthening India's domestic chip ecosystem. With a combined investment of ₹3,936 crore and expected employment generation of over 2,200 skilled professionals, these projects introduce critical capabilities such as India's first commercial GaN-based Mini/Micro LED display facility and an OSAT (assembly and testing) unit. Located in Gujarat, they expand the ecosystem across both advanced display technologies and semiconductor packaging.



Technological and Industrial Significance

The projects enhance India's position across key segments of the semiconductor value chain. Crystal Matrix will establish an integrated compound semiconductor fabrication facility with GaN foundry services, enabling high-end applications like **XR devices, smart wearables, and advanced displays**. Suchi Semicon's OSAT facility will support large-scale chip assembly and testing, catering to sectors such as automotive, industrial automation, and power electronics. Together, they address critical gaps in manufacturing, packaging, and application-specific chip production, which are essential for building a complete semiconductor ecosystem.

India's semiconductor market has shown impressive growth from \$38 billion in 2023 to a projected \$100–110 billion by 2030 which shows strong demand-side momentum. By 2029, India aims to meet 70–75% of its domestic chip demand through local production, and by 2035, emerge as a leading global semiconductor hub. The latest project approvals reinforce India's steady transition from a design-centric base to a full-spectrum semiconductor ecosystem. By combining policy support, technological investments, and global alignment, the India Semiconductor Mission is evolving into a cornerstone of economic resilience and strategic autonomy, positioning India as a key player in the future of global technology supply chains.

Schemes under ISM

- **Semiconductor Fabs Scheme:** Provides up to 50 per cent fiscal support for setting up semiconductor wafer fabrication units, covering advanced and mature technology nodes.
- **Display Fabs Scheme:** Offers up to 50 per cent financial support to establish AMOLED and LCD display fabrication units in India.
- **Compound Semiconductors and ATMP/OSAT Scheme:** Supports compound semiconductor and chip assembly, testing and packaging units with up to 50 per cent capital assistance.
- **Design Linked Incentive Scheme:** With an outlay of ₹1,000 crore, supports chip design startups and MSMEs through R&D support and incentives of up to ₹15 crore per compar

India Semiconductor Mission

The India Semiconductor Mission (ISM), launched in 2021 with an outlay of ₹76,000 crore, aims to establish India as a global hub for semiconductor design and manufacturing. It provides up to 50% fiscal support for fabs, compound semiconductors, packaging units, and design infrastructure.

The mission aligns with broader national initiatives like Make in India and Make for the World, focusing on:

- Building domestic manufacturing capacity
- Strengthening chip design capabilities
- Reducing import dependence
- Creating a resilient and self-sufficient semiconductor ecosystem

Link with Crop Diversification Challenges

With the latest approvals, the total number of sanctioned projects under ISM has reached 12, with cumulative investments of around ₹1.64 lakh crore. Key progress includes:

- Operationalisation of initial units, with some already beginning commercial shipments
- Development of design infrastructure across 300+ academic institutions and 100+ startups
- Expansion into diverse segments such as silicon fabs, compound semiconductors, and advanced packaging.

PRELIMS CORNER :

1) The first Gandharva Mahavidyalaya, a music training school, was set up in 1901 by Vishnu Digambar Paluskar in

- (a) Delhi
- (b) Gwalior
- (c) Ujjain
- (d) Lahore



2) The irrigation device called 'Araghatta' was

- (a) a water bag made of leather pulled over a pulley
- (b) a large wheel with earthen pots tied to the outer ends of its spokes
- (c) a larger earthen pot driven by bullocks
- (d) a large water bucket pulled up by rope directly by hand



WONDERS OF INDIA

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Champaner-Pavagadh Archaeological Park

The Palitana Temples, located on the sacred Shatrunjaya Hill near the town of Palitana, Gujarat form one of the holiest pilgrimage sites in Jainism. Often called the "City of Temples," this remarkable temple complex is believed to be a gateway to spiritual liberation (nirvana), and every devout Jain aspires to visit it at least once in their lifetime. In keeping with its sacred nature, no one (including priests) is allowed to stay overnight on the hill, as it is considered a divine abode.

Spread across the hill are around 800–900 intricately carved marble temples, built over nearly 900 years, beginning in the 11th century under the patronage of rulers like **Kumarpal Solanki**. The temples are arranged in clusters called tunks, each with a main shrine surrounded by smaller ones. The most important shrine is dedicated to Rishabhanatha (Adinath), who is believed to have meditated and delivered sermons here. The climb to the summit of over 3,500 stone steps is physically demanding but spiritually rewarding, offering breathtaking views and a deeply immersive experience.

The site also reflects a rich historical journey, having been destroyed by Turkish Muslim invaders in 1311 AD). Even today, it remains a vibrant centre of faith, especially during festivals like Kartik Purnima, when thousands of pilgrims undertake the sacred ascent, reinforcing its enduring cultural and religious significance.



Prelims Corner: Explanations

1) The correct answer is (d) Lahore

The first Gandharva Mahavidyalaya was established in Lahore (1901) by Vishnu Digambar Paluskar, marking a turning point in the evolution of Hindustani Classical Music. At a time when music was largely confined to royal courts and hereditary performers, Paluskar democratized access by creating an institution open to common aspirants, independent of princely patronage.

He introduced a structured curriculum, standardized notation system, and published textbooks such as Sangeet Bal Prakash, transforming the traditional guru-shishya system into a more systematic pedagogy. Through the Gandharva Mahavidyalaya network, he trained disciples who later spread music education across India, creating a pan-Indian institutional framework.

Paluskar also revolutionized performance culture by pioneering ticketed public concerts, shifting music from elite spaces to a broader, paying audience. He emphasized discipline, moral conduct, and respectability among musicians, helping elevate their social status.

Additionally, he linked music with nationalism by popularizing bhajans like Raghupati Raghav Raja Ram and Vande Mataram in public movements. These efforts helped in integrating art with social and political life.

Therefore, both Paluskar and the Gandharva Mahavidyalaya played a foundational role in modernizing, institutionalizing, and popularizing Indian classical music.



2) The correct answer is (b)

Araghatta refers to a mechanical device or waterwheel used for irrigation during medieval India. It was an essential agricultural tool that helped lift water from wells or rivers for irrigation purposes. Araghatta was widely used in the agricultural economy of medieval India, particularly in regions where groundwater had to be lifted for irrigation. It functioned using a series of pots or buckets attached to a wheel, operated either by human or animal power. This technology significantly contributed to agricultural productivity in arid and semi-arid areas.



Q.) With reference to the economic history of medieval India, the term 'Araghatta' refers to (2016)

- (a) bonded labor
- (b) land grants made to military officers
- (c) waterwheel used in the irrigation of land
- (d) wasteland converted to cultivated land