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# **VIDHVATH IAS KAS ACADEMY & STUDY CENTRE**

## **DAILY MCQ'S**

**FOR UPSC CIVIL SERVICE EXAMINATION**

**DATE: 13<sup>TH</sup> FEB-2026 (FRIDAY)**

- **Static mcq's**
- **Current Affairs mcq's**
- **Mains Practice Questions**



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## DAILY PRACTICE QUESTIONS FROM STATIC PART

1. With reference to certain advanced defence and plasma physics concepts, consider the following statements:
  1. Man Portable Anti-Tank Guided Missile (MPATGM) developed by DRDO employs an Imaging Infra-Red (IIR) seeker enabling true fire-and-forget capability against both static and moving armoured targets.
  2. The Greenwald Limit defines an upper bound on plasma density in tokamak fusion devices that depends directly on plasma current and inversely on the square of the minor radius of the plasma column.

How many of the above statements are correct?

- (a) Only one
- (b) Only two
- (c) Both statements are incorrect
- (d) Neither statement can be inferred from known physics

**Answer:** (a)

**Explanation:**

Statement 1 is correct: India's MPATGM uses an indigenous IIR seeker and top-attack, fire-and-forget capability tested by DRDO.

Statement 2 is incorrect: The Greenwald density limit scales roughly with plasma current divided by plasma cross-sectional area ( $\propto I_p / \pi a^2$ ), not inversely with minor radius squared alone; formulation in the statement is misleading because the proportionality already includes area dependence rather than separate inverse-radius scaling.

2. The Polar Satellite Launch Vehicle (PSLV) of India is considered uniquely versatile among medium-lift launchers primarily because it
  - (a) employs cryogenic propulsion in all upper stages enabling repeated orbital insertion capability
  - (b) combines solid and liquid propulsion stages in an alternating configuration allowing precise multi-orbit deployment in a single mission
  - (c) is the only operational launcher capable of placing payloads simultaneously in LEO, MEO, and GEO in one flight
  - (d) uses semi-cryogenic engines in strap-on boosters providing throttling flexibility during ascent

**Answer:** (b)

**Explanation:**

PSLV's hallmark is its four-stage configuration alternating solid and liquid propulsion (solid-liquid-solid-liquid). This design provides both high thrust and controllability, enabling multiple restarts of the liquid PS4



stage for complex multi-orbit deployments. It does not use cryogenic or semi-cryogenic stages, and no launcher places payloads into three distinct orbital regimes in one flight.

3. With reference to atmospheric aerosols and their climatic effects, consider the following statements:
1. All atmospheric aerosols exert a net cooling effect on Earth's radiative balance because they scatter incoming solar radiation.
  2. Black carbon aerosols can accelerate glacier melt even without increasing ambient air temperature significantly.
  3. Secondary aerosols are formed in the atmosphere through chemical transformation of precursor gases rather than direct emission.

How many of the above statements are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer:** (b)

**Explanation:**

Statement 1 is incorrect: Aerosols have both cooling (sulfates) and warming (black carbon) effects; net impact varies by type and region.

Statement 2 is correct: Black carbon deposited on snow reduces albedo, enhancing absorption and melt without large air-temperature change.

Statement 3 is correct: Secondary aerosols (e.g., sulfate, nitrate) form via atmospheric reactions of SO<sub>2</sub>, NO<sub>x</sub>, VOCs.

4. With reference to the Pax Silica Initiative, consider the following statements:
1. It is an international collaborative programme aimed at standardising silica sand purity norms for semiconductor-grade silicon production.
  2. India participates in it primarily through the Ministry of Mines and Geological Survey of India.
  3. The initiative seeks to diversify global supply chains away from geographically concentrated high-purity quartz sources.
  4. It is formally linked to the International Energy Agency's critical minerals security framework.

How many of the above statements are correct?

- (a) Only one
- (b) Only two
- (c) Only three
- (d) All four



**Answer:** (a)

**Explanation:**

Pax Silica Initiative is a supply-chain resilience concept discussed in semiconductor raw-material geopolitics focusing on high-purity quartz/silica diversification (Statement 3 broadly correct).

Statement 1 is incorrect: It is not a standards-setting body.

Statement 2 is incorrect: India's semiconductor-grade silica efforts involve MeitY and industry more than GSI-led participation in such initiative.

Statement 4 is incorrect: No formal institutional linkage with IEA frameworks exists; it is discussed in policy/strategic circles rather than as an IEA mechanism.

5. Assertion (A): In tokamak fusion devices, exceeding the Greenwald density limit often leads to plasma disruptions that terminate confinement.

Reason (R1): The limit arises because higher plasma density increases radiative losses and edge instabilities, degrading confinement stability.

Reason (R2): The Greenwald limit depends solely on toroidal magnetic field strength and is independent of plasma current.

(a) A is correct; R1 is correct; R2 is incorrect

(b) A is correct; both R1 and R2 are correct

(c) A is incorrect; R1 is correct; R2 is incorrect

(d) A is correct; R1 is incorrect; R2 is correct

**Answer:** (a)

**Explanation:**

Assertion is correct: Surpassing Greenwald density typically triggers edge-localized instabilities and disruptions in tokamaks.

R1 is correct: Higher density raises radiative cooling and turbulence at the edge, undermining confinement.

R2 is incorrect: The Greenwald limit scales with plasma current and device size (minor radius), not solely magnetic field; thus it is not independent of plasma current.

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## DAILY PRACTICE QUESTIONS FROM CURRENT AFFAIRS

**Q1.** With reference to the **International Renewable Energy Agency (IRENA)**, consider the following statements:

1. It was established under the aegis of the United Nations Framework Convention on Climate Change (UNFCCC) to facilitate technology transfer for renewable energy.
2. India's initiative on "Global Biofuel Alliance" was formally endorsed by IRENA as a multilateral implementation platform at COP-28.



Which of the above statements is/are correct?

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

**Answer:** (d)

**Explanation:**

IRENA is an independent intergovernmental organization founded in 2009, not under UNFCCC. Hence Statement 1 is incorrect. The Global Biofuel Alliance (launched at G20 2023) is supported by multiple countries, but it is not an IRENA-endorsed implementation platform under COP-28 architecture; IRENA only provides analytical support to bioenergy transitions. Hence Statement 2 is also incorrect.

**Q2.** The official **BRICS India 2026 Presidency logo** unveiled by India primarily incorporates which of the following symbolic themes?

- (a) Panchatatva with Ashoka Chakra geometry
- (b) Lotus mandala with Devanagari typography
- (c) Chakra-based spiral signifying cyclical growth among Global South
- (d) Conch-shell motif representing maritime cooperation

**Answer:** (c)

**Explanation:**

India's BRICS 2026 logo uses a **chakra-inspired spiral form** symbolizing continuity, inclusivity and cyclical development among emerging economies. It visually merges India's civilizational motif (chakra) with BRICS multilateral growth dynamics. Other motifs listed were not part of the official design grammar.

**Q3.** With reference to the phenomenon termed "**Havana Syndrome**", consider the following statements:

1. It has been officially recognized by the World Health Organization as a distinct neurological disorder caused by directed microwave radiation exposure.
2. A U.S. intelligence community assessment concluded with high confidence that a foreign adversary deployed energy weapons causing the syndrome.
3. Some hypotheses link symptoms to pulsed electromagnetic energy capable of inducing the Frey effect in humans.

How many of the above statements are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None



**Answer:** (a)

**Explanation:**

WHO has **not recognized Havana Syndrome as a defined medical disorder** → Statement 1 incorrect.

The 2023 U.S. intelligence assessment concluded **no credible evidence of foreign adversary weapon deployment** → Statement 2 incorrect.

One leading scientific hypothesis involves **pulsed microwave exposure producing auditory sensations (Frey effect)** → Statement 3 correct.

Hence only one statement is correct.

**Q4.** With reference to the **S. Sahoo Committee** constituted by SEBI, consider the following statements:

1. It was set up to review ownership and economic structure of clearing corporations in Indian capital markets.
2. The Committee recommended mandatory listing of all clearing corporations to enhance transparency.
3. It proposed ring-fencing of clearing corporations from stock exchange commercial risks through separate shareholding caps.

How many of the above statements are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer:** (b)

**Explanation:**

The S. Sahoo Committee (2023) reviewed **ownership, governance and resilience of clearing corporations** → Statement 1 correct.

It **did not recommend mandatory listing**; rather it emphasized systemic stability over market listing → Statement 2 incorrect.

It proposed **ownership caps and ring-fencing from exchange risks** to protect clearing corporations' independence → Statement 3 correct.

Hence two statements are correct.

**Q5.** Consider the following statements regarding **Jharkhand Megalithic traditions**:

1. They are primarily associated with Austroasiatic-speaking tribal communities such as the Munda and Ho.
2. The megaliths function exclusively as burial markers without ritual or territorial significance.
3. Jharkhand hosts India's largest concentration of living megalith-erecting traditions.



4. Archaeological evidence suggests continuity of megalithic practices from Iron Age to present ethnographic cultures in the region.

How many of the above statements are correct?

- (a) Only one
- (b) Only two
- (c) Only three
- (d) All four

**Answer:** (c)

**Explanation:**

Munda-Ho communities maintain megalith traditions → Statement 1 correct.

Megaliths serve **memorial, territorial, clan and ritual functions**, not only burials → Statement 2 incorrect.

Jharkhand indeed has **largest surviving living megalith traditions in India** → Statement 3 correct.

Archaeology shows **Iron Age–ethnographic continuity** → Statement 4 correct.

Hence three statements correct.

**Q6.** The **Shaksgam Valley**, sometimes in news in India–China–Pakistan strategic discourse, is best described as:

- (a) A glaciated valley south of Siachen Glacier administered by India but claimed by Pakistan
- (b) A trans-Karakoram tract ceded by Pakistan to China lying north of the Karakoram Range
- (c) The valley containing the source of Shyok River within Indian Ladakh
- (d) A corridor connecting Gilgit-Baltistan to Wakhan under Afghan control

**Answer:** (b)

**Explanation:**

Shaksgam Valley (Trans-Karakoram Tract) lies **north of the Karakoram Range**, part of the larger Kashmir region. Pakistan ceded it to China in the 1963 Sino-Pakistan Agreement; India considers it illegally ceded territory. It is separate from Siachen–Shyok areas and not linked to Wakhan.

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## DAILY PRACTICE QUESTIONS FOR MAINS ANSWER WRITING PRACTICE

### GS-1 (Indian Society / Culture)

**Q1.** Megalithic traditions in India represent both archaeological heritage and living cultural practice. Examine their regional distribution and socio-cultural significance with special reference to Jharkhand.



**Answer:**

Megaliths—large stone memorials erected in commemorative, funerary or ritual contexts—represent one of the most enduring cultural continuities in the Indian subcontinent. Unlike purely archaeological relics in many regions of the world, several Indian megalithic traditions survive as living practices, particularly in eastern and northeastern India.

**Regional distribution:**

Archaeologically, megalithic sites span peninsular India (Karnataka, Tamil Nadu, Maharashtra), central India, Vidarbha, and the Chotanagpur plateau. However, ethnographic continuity is strongest in Jharkhand, Odisha, Chhattisgarh and Northeast India. Jharkhand alone contains thousands of megalith sites such as Sasandiri and Burudih, making it India's densest living megalithic landscape.

**Socio-cultural significance:**

1. **Ancestral commemoration:**

Among Munda, Ho, Oraon and Santhal communities, megaliths mark burial or memorial sites of clan ancestors. They reinforce lineage continuity and collective memory.

2. **Territorial identity:**

Megalith clusters demarcate village boundaries and sacred groves (Sarna), embedding land rights in ritual geography.

3. **Ritual cosmology:**

Megalith erection ceremonies involve feasts, sacrifices and communal labour, symbolizing reciprocity between living and ancestral worlds.

4. **Social stratification:**

Stone size and arrangement reflect clan prestige, wealth and status of the deceased.

5. **Archaeological continuity:**

Iron-Age megalithic structures in peninsular India share typological similarities (menhirs, dolmens, cairns) with present tribal memorial stones, suggesting long cultural persistence.

**Contemporary relevance:**

Urbanisation, mining and land acquisition threaten Jharkhand's megalith sites. Recognition as intangible cultural heritage could strengthen preservation. Megaliths also challenge rigid divisions between "prehistoric" and "tribal" societies, demonstrating indigenous historical agency.

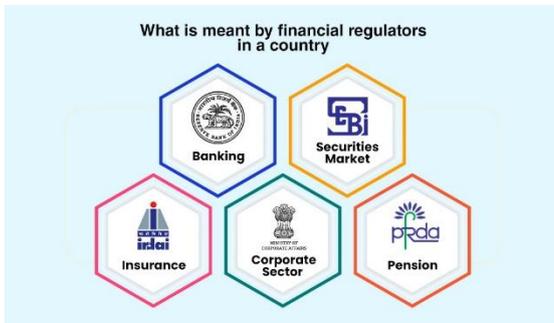
**Conclusion:**

Jharkhand's megaliths embody a rare civilizational continuity where archaeology merges with living culture. Protecting them is essential not merely for heritage conservation but for safeguarding indigenous identity and landscape memory.



## GS-2 (Polity / Governance)

**Q2.** Independent regulatory institutions are central to modern governance but often face accountability and autonomy dilemmas. Discuss with reference to India's financial sector regulators.



### Answer:

Independent regulatory institutions such as the Reserve Bank of India (RBI), Securities and Exchange Board of India (SEBI), and Insurance Regulatory and Development Authority of India (IRDAI) form the backbone of India's financial governance architecture. They aim to ensure market stability, consumer protection and systemic resilience while remaining insulated from political and commercial pressures.

### Need for independence:

1. **Technical decision-making:**

Financial regulation requires expertise in monetary policy, risk modelling and securities markets, beyond routine political processes.

2. **Credibility and investor confidence:**

Autonomous regulators enhance trust in markets and reduce sovereign risk perceptions.

3. **Systemic stability:**

During crises (e.g., banking stress, market volatility), swift regulatory intervention is essential.

### Autonomy–accountability dilemma:

1. **Democratic deficit:**

Regulators exercise quasi-legislative and quasi-judicial powers without direct electoral accountability.

2. **Regulatory capture:**

Close interaction with industry may bias decisions toward market players rather than public interest.

3. **Fragmented oversight:**

Multiple regulators can create jurisdictional overlaps and coordination gaps.

### Financial sector illustrations:

- RBI's monetary policy autonomy sometimes conflicts with fiscal priorities.



- SEBI's governance of clearing corporations and exchanges raised ownership-conflict concerns (addressed by Sahoo Committee).
- IL&FS crisis exposed gaps in regulatory coordination across agencies.

**Balancing mechanisms:**

1. Parliamentary oversight and reporting requirements
2. Appellate tribunals (SAT) for regulatory decisions
3. Transparent rule-making and consultations
4. Fixed tenure and removal safeguards for leadership

**Way forward:**

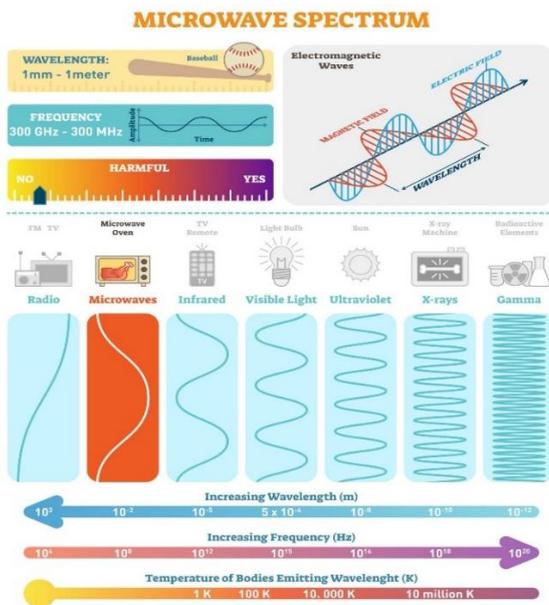
A unified financial regulatory framework (e.g., FSDC strengthening), enhanced transparency, and post-facto accountability rather than ex-ante control can reconcile autonomy with democratic legitimacy.

**Conclusion:**

Effective financial governance requires regulators that are independent yet answerable. India's challenge lies not in reducing autonomy but in institutionalizing robust accountability without undermining expertise-based regulation.

**GS-3 (Science & Technology / Security)**

**Q3.** Emerging neuro-technological threats and unexplained health incidents have expanded the scope of non-kinetic warfare. Examine the challenges they pose to national security with reference to Havana Syndrome-type concerns.





**Answer:**

Non-kinetic warfare refers to strategic actions that incapacitate adversaries without conventional physical force. Allegations surrounding Havana Syndrome—neurological symptoms reported by diplomats—highlight concerns about directed energy or electromagnetic exposure as potential covert tools.

**Nature of threat:**

Victims reported headaches, vertigo, tinnitus and cognitive impairment. Though causation remains disputed, hypotheses include pulsed microwave exposure causing neural or auditory effects (Frey effect). Even unproven, such incidents reveal vulnerabilities in diplomatic and intelligence environments.

**National security challenges:**

- 1. Attribution difficulty:**  
Non-kinetic exposures leave minimal forensic evidence, complicating responsibility determination and retaliation decisions.
- 2. Grey-zone warfare:**  
Such tactics fall below armed conflict thresholds, enabling deniability and strategic ambiguity.
- 3. Diplomatic vulnerability:**  
Embassies and intelligence personnel abroad are soft targets lacking military-grade protection.
- 4. Psychological warfare:**  
Uncertainty about invisible threats amplifies fear and morale erosion among officials.
- 5. Technological asymmetry:**  
Advanced directed-energy capabilities may be monopolized by a few states, creating power imbalances.

**India's concerns:**

India maintains large diplomatic and intelligence footprints globally. Urban electronic density and proximity to adversarial actors increase exposure risks. Emerging domestic neuro-tech research also raises dual-use implications.

**Policy responses:**

- Strengthening technical surveillance counter-measures in missions
- Medical protocols for unexplained neurological incidents
- International norms on directed-energy weapons
- Interdisciplinary research on electromagnetic bio-effects
- Intelligence cooperation on anomalous incidents

**Conclusion:**

Havana-type episodes underscore a future battlefield where biology, cognition and technology intersect. For



India, preparedness must extend beyond kinetic defense to neuro-security and electromagnetic resilience in the evolving security landscape.

## GS-4 (Ethics)

**Q4.** Technological uncertainty and ambiguous scientific evidence often complicate public decision-making. Discuss the ethical principles that should guide governments when responding to uncertain health or environmental risks.



The Precautionary Principle

### Answer:

Governments frequently confront risks where scientific certainty is incomplete—examples include radiation exposure, emerging pathogens, environmental toxins or unexplained syndromes. Ethical governance in such contexts requires balancing precaution, transparency and proportionality.

### Key ethical principles:

- 1. Precautionary principle:**  
When potential harm is serious or irreversible, lack of full scientific certainty should not delay preventive action. This principle underlies environmental and public health policy globally.
- 2. Non-maleficence:**  
State actions must avoid causing harm—either through negligence (inaction) or overreaction (panic-inducing measures).
- 3. Transparency and honesty:**  
Citizens deserve truthful communication about uncertainties, risks and evidence gaps. Concealment erodes trust.
- 4. Proportionality:**  
Responses should match risk magnitude; excessive restrictions without evidence violate civil liberties.
- 5. Accountability:**  
Decision-makers must justify actions and revise policies as evidence evolves.



**6. Equity:**

Risk burdens and protective measures should not disproportionately affect vulnerable groups.

**Application to uncertain threats:**

In cases like unexplained health incidents, governments should investigate scientifically, provide medical support, avoid premature blame, and communicate evolving findings transparently. Ethical failure occurs either in denial or sensationalism.

**Indian context:**

Past environmental and health controversies show the cost of delayed precaution and weak risk communication. Institutionalizing ethics committees and science-policy interfaces can improve responses.

**Conclusion:**

Ethical governance under uncertainty demands humility before incomplete knowledge, commitment to public welfare, and openness to evidence revision. Such principles sustain legitimacy even when certainty is unattainable.

## Current Affairs -

**Q5.** India's rapid expansion of Artificial Intelligence capabilities has significant environmental implications. Examine the energy-water footprint of AI infrastructure and suggest pathways for sustainable AI development in India.

**Answer:**

Artificial Intelligence development depends on high-performance computing infrastructure—data centres, GPUs and cloud networks—whose environmental footprint is increasingly significant. As India scales AI under Digital India and semiconductor initiatives, sustainability concerns are emerging.

**Environmental footprint:**

**1. Energy consumption:**

Training large AI models requires massive electricity for computation. Data centres already account for a growing share of global power demand; India's digital expansion will amplify this.

**2. Carbon emissions:**

Where electricity grids rely on fossil fuels, AI computing indirectly raises emissions intensity.

**3. Water usage:**

Data-centre cooling consumes substantial freshwater—critical in water-stressed Indian regions.

**4. Electronic waste:**

Rapid hardware obsolescence generates toxic e-waste streams.

**India-specific concerns:**

- Many planned data-centre clusters lie in hot climatic zones needing intensive cooling.
- Urban water scarcity (e.g., Bengaluru, Hyderabad) intersects with data-centre growth.



- Coal-dependent grid raises carbon footprint of AI training.

### Pathways for sustainable AI:

1. **Green data centres:**  
Mandatory renewable-energy sourcing, energy-efficient architectures and waste-heat recovery.
2. **Water-efficient cooling:**  
Liquid immersion or recycled-water cooling technologies suited to arid climates.
3. **Efficient algorithms:**  
Promoting low-compute AI models and shared national compute infrastructure to avoid duplication.
4. **Carbon disclosure norms:**  
AI firms reporting energy and emissions footprint of training runs.
5. **Spatial planning:**  
Locating data centres near renewable-energy hubs and water-secure regions.
6. **Circular electronics policy:**  
GPU recycling and extended hardware lifecycles.

### Strategic opportunity:

India can position itself as a global hub for **sustainable AI infrastructure**, integrating green energy leadership with digital growth.

### Conclusion:

AI expansion and environmental stewardship need not conflict. With forward-looking policy and technology choices, India can achieve digital sovereignty while minimizing ecological costs, making sustainability a core pillar of its AI strategy.

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