MISSION X PRESENTS

X TECH

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SECTION

Space Technology

01 Elias 2-24 b — The Youngest Exoplanet Ever Found

GS PAPER III · SPACE TECHNOLOGY · ASTRONOMY

Elias 2-24 b — The Youngest Exoplanet Ever Found

NEWS IN BRIEF

- Confirmed as a Jupiter-sized exoplanet less than 1 million years old, announced 17 September 2026.
- Orbits a young star 450 light-years away, still forming within its natal gas-dust disk.
- Detected via a disk gap spotted by ALMA, later imaged using Keck Observatory's coronagraph.
- Challenges planet-formation models, which predicted such a giant planet needs 5+ million years to form.

KEY CONCEPTS EXPLAINED

Protoplanetary Disk: A rotating disk of gas and dust around a young star from which planets are born.

Coronagraph: An instrument that blocks a star's glare, letting astronomers directly image faint nearby objects like planets.

Planet Formation Models: Scientific theories predicting how quickly planets form within a disk; this discovery suggests they're incomplete.

⚡ UNIQUE FACT

Elias 2-24 b is more than 4,500 times younger than Earth, yet it's already a fully-formed, Jupiter-sized giant planet — making astronomers rethink how fast giant planets can actually form.

⚠ EXAM TRAP

Don't assume Elias 2-24 b was detected instantly in 2026 — the disk gap was first spotted years earlier by ALMA, and confirming the planet took a decade of follow-up observation.

📌 PRELIMS MEMORY BANK

- Confirmed: 17 September 2026 (Astrophysical Journal Letters)
- Age: less than 1 million years old (youngest exoplanet known)
- Distance: ~450 light-years from Earth
- Mass class: Jupiter-sized
- Detection tools: ALMA (gap) + Keck Observatory coronagraph (imaging)

PRACTICE MCQ · UPSC PRELIMS STYLE

Elias 2-24 b — The Youngest Exoplanet Ever Found

With reference to the exoplanet Elias 2-24 b, consider the following statements:

1. It is the youngest exoplanet discovered to date.
2. It was detected instantly in 2026 with no prior observational history.
3. Its rapid formation is consistent with existing planet-formation models.

Which of the statements given above is/are correct?

(a) 1 only

(b) 1 and 2 only

(c) 2 and 3 only

(d) 1, 2 and 3

✓ **Correct Answer: (a) 1 only**

SOLUTION EXPLAINED

① THROUGH LOGICAL ANALYSIS

The disk gap around Elias 2-24 was first noted by ALMA years before confirmation, and the planet's fast formation is described as challenging, not confirming, existing models — statements 2 and 3 both misrepresent the discovery's timeline and significance.

② THROUGH FACTUAL KNOWLEDGE

Elias 2-24 b is confirmed as the youngest known exoplanet; its detection built on years of prior ALMA and ESO observations; and its rapid formation challenges rather than confirms current planet-formation theories.



SECTION

Defence Technology

02 DRDO Achieves Indigenous GaN MMIC Breakthrough

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GS PAPER III · DEFENCE TECHNOLOGY · SEMICONDUCTOR ELECTRONICS

DRDO Achieves Indigenous GaN MMIC Breakthrough

NEWS IN BRIEF

- DRDO's Solid State Physics Laboratory demonstrated indigenous GaN MMIC technology, confirmed in the MoD's FY2025-26 Annual Report.
- Technology includes X-band MMICs and S-band GaN HEMT power amplifiers for radar and electronic warfare.
- India joins a select group of 6 nations (US, France, Russia, Germany, South Korea, China) with this capability.
- Breakthrough followed France's refusal to share GaN tech under the Rafale offset deal, spurring indigenous development.

KEY CONCEPTS EXPLAINED

MMIC: Monolithic Microwave Integrated Circuit — a chip that generates, amplifies and processes high-frequency radio signals on one piece of material.

GaN (Gallium Nitride): A semiconductor material that handles much higher power and heat than silicon, ideal for radars and electronic warfare.

HEMT: High Electron Mobility Transistor, a transistor design used in GaN chips for fast, high-power amplification.

⚡ UNIQUE FACT

A single indigenous GaN chip, just 3.5 x 3 mm in size, can deliver up to 30 watts of power while operating roughly 300 times faster than an equivalent silicon-based chip.

⚠ EXAM TRAP

Don't assume India developed GaN technology with foreign assistance — the breakthrough was achieved indigenously specifically after France denied India access to this technology under the Rafale offset deal.

📌 PRELIMS MEMORY BANK

- Developer: DRDO's Solid State Physics Laboratory (SSPL), Delhi
- Production facility: GAETEC, Hyderabad
- Confirmed in: MoD Annual Report FY2025-26 (September 2026)
- Nations with this tech: now 6, including India
- Applications: radar, electronic warfare, communication systems

PRACTICE MCQ · UPSC PRELIMS STYLE

DRDO Achieves Indigenous GaN MMIC Breakthrough

With reference to India's indigenous GaN MMIC technology, consider the following statements:

1. It was developed with direct technical assistance from France under the Rafale offset agreement.
2. GaN-based chips can operate at higher power and frequency than conventional silicon chips.
3. India is now among a small group of nations with indigenous GaN MMIC capability.

Which of the statements given above is/are correct?

(a) 2 and 3 only

(b) 1 and 2 only

(c) 1 and 3 only

(d) 1, 2 and 3

✓ **Correct Answer: (a) 2 and 3 only**

SOLUTION EXPLAINED

① THROUGH LOGICAL ANALYSIS

The breakthrough is explicitly described as pursued indigenously AFTER France refused to share this technology under the Rafale deal — a statement claiming French assistance contradicts the origin story of this achievement.

② THROUGH FACTUAL KNOWLEDGE

GaN chips handle higher power and frequency than silicon, making them ideal for radar and EW; and India has joined a select group of six nations with indigenous GaN MMIC capability.

GS PAPER III · DEFENCE TECHNOLOGY · UNMANNED AERIAL VEHICLES

MQ-9 Reaper Losses Push US Toward Cheaper Successor

NEWS IN BRIEF

- The US Air Force has lost around 45-50 MQ-9 Reaper drones during Operation Epic Fury against Iran (2026).
- In response, the USAF is fast-tracking the Massed Modular Aircraft (MMA) programme for a ~$10 million successor.
- General Atomics unveiled 'Wildfire,' a candidate drone that can carry heavy stand-off missiles in coordinated swarms.
- The shift reflects moving from expensive, survivable drones to cheap, expendable ones for contested airspace.

KEY CONCEPTS EXPLAINED

Massed Modular Aircraft (MMA): A US programme to rapidly field low-cost, expendable drones as an alternative to costly platforms.

Attritable Drone: An unmanned aircraft designed to be affordable enough that losing it in combat is an acceptable cost.

Contested Airspace: Airspace where an adversary has functioning air defences, making older, non-stealthy aircraft vulnerable.

⚡ UNIQUE FACT

The MQ-9 Reaper, once the US military's flagship strike drone, has proven so vulnerable in contested airspace that the Air Force's answer isn't a better Reaper — it's an aircraft designed to be affordable enough to lose.

⚠ EXAM TRAP

Don't confuse the Massed Modular Aircraft programme with the MQ-9 Reaper itself — the MMA is a separate, upcoming low-cost successor programme, not an upgrade to the existing Reaper.

📌 PRELIMS MEMORY BANK

- Losses: ~45-50 MQ-9 Reapers during Operation Epic Fury (2026)
- New programme: Massed Modular Aircraft (MMA)
- Target cost: ~$10 million per airframe
- Candidate: 'Wildfire' by General Atomics
- Planned fleet: 180+ aircraft, fielding possible by 2029

PRACTICE MCQ · UPSC PRELIMS STYLE

MQ-9 Reaper Losses Push US Toward Cheaper Successor

With reference to the US Air Force's MQ-9 Reaper drone, consider the following statements:

1. It has suffered significant combat losses in operations against Iran in 2026.
2. The Massed Modular Aircraft programme aims to upgrade the existing MQ-9 Reaper airframe.
3. The proposed successor drones are designed to be affordable enough to be expendable in combat.

Which of the statements given above is/are correct?

(a) 1 and 3 only

(b) 1 and 2 only

(c) 2 and 3 only

(d) 1, 2 and 3

✓ **Correct Answer: (a) 1 and 3 only**

SOLUTION EXPLAINED

① THROUGH LOGICAL ANALYSIS

The Massed Modular Aircraft programme is explicitly a NEW aircraft development effort meant to replace the MQ-9 Reaper — a statement describing it as an upgrade to the existing airframe misrepresents it as a modification rather than a successor programme.

② THROUGH FACTUAL KNOWLEDGE

The MQ-9 Reaper has suffered significant losses during Operation Epic Fury; and the Massed Modular Aircraft programme's core philosophy is fielding cheap, expendable successor drones.

GS PAPER III · DEFENCE TECHNOLOGY · MISSILE DEFENCE

GM Joins Patriot Missile Production Amid Global Shortage

NEWS IN BRIEF

- General Motors began supplying components to Lockheed Martin for PAC-3 MSE interceptors in September 2026.
- The partnership aims to rebuild depleted US Patriot interceptor stockpiles amid Ukraine and Middle East demand.
- Lockheed secured a contract worth up to $58.6 billion to scale PAC-3 MSE output to 2,000 missiles/year by 2030.
- CSIS estimates the US currently has fewer than 1,000 Patriot interceptors on hand.

KEY CONCEPTS EXPLAINED

Patriot System: 'Phased Array Tracking Radar to Intercept on Target' — a mobile, ground-based system that detects and intercepts aircraft, drones and missiles.

PAC-3 MSE: A 'hit-to-kill' interceptor missile used within the Patriot system to destroy incoming ballistic and cruise missiles.

Hit-to-Kill: An interception method that destroys a target through the force of direct collision, rather than an exploding warhead.

⚡ UNIQUE FACT

General Motors, traditionally a carmaker, is now supplying components for Patriot missile interceptors — a striking example of civilian manufacturing capacity being redirected to rebuild depleted military stockpiles.

⚠ EXAM TRAP

Don't confuse the Patriot system (the overall mobile air defence platform) with PAC-3 MSE (a specific hit-to-kill interceptor used within that system) — Patriot can fire different interceptor types.

📌 PRELIMS MEMORY BANK

- Patriot acronym: Phased Array Tracking Radar to Intercept on Target
- First activated: May 1982; first combat success: 1991 Gulf War
- New partner: General Motors (supplying PAC-3 MSE components, Sept 2026)
- Lockheed contract: up to $58.6 billion, target 2,000/year by 2030
- Current US stockpile: estimated under 1,000 interceptors

PRACTICE MCQ · UPSC PRELIMS STYLE

GM Joins Patriot Missile Production Amid Global Shortage

With reference to the Patriot air and missile defence system, consider the following statements:

1. PAC-3 MSE is a hit-to-kill interceptor used within the Patriot system.
2. The Patriot system was first successfully used in combat during the 1991 Gulf War.
3. General Motors has begun supplying components for Patriot interceptor production.

Which of the statements given above is/are correct?

(a) 1, 2 and 3

(b) 1 and 2 only

(c) 2 and 3 only

(d) 1 and 3 only

✓ **Correct Answer: (a) 1, 2 and 3**

SOLUTION EXPLAINED

① THROUGH LOGICAL ANALYSIS

All three claims align directly with well-documented, mutually consistent facts about the Patriot programme's technology, history and 2026 industrial partnerships — a rare case where the correct answer is that all statements hold.

② THROUGH FACTUAL KNOWLEDGE

PAC-3 MSE is confirmed as a hit-to-kill interceptor within the Patriot system; the Patriot achieved its first combat success intercepting an Iraqi Scud in 1991; and General Motors began supplying Patriot interceptor components in 2026.

GS PAPER III · DEFENCE TECHNOLOGY · NAVAL SHIPBUILDING

Cochin Shipyard Lays Keel for First NGMV

NEWS IN BRIEF

- Cochin Shipyard laid the keel for India's first Next Generation Missile Vessel (NGMV), 'BY 531,' on 18 September 2026.
- Steel-cutting for the second NGMV began a day earlier, on 17 September 2026.
- Part of a six-vessel, ₹9,805 crore contract signed with the Ministry of Defence in March 2023.
- NGMVs will carry BrahMos missiles, VL-SRSAM air-defence missiles and advanced radars.

KEY CONCEPTS EXPLAINED

Keel Laying: A ceremony marking the formal start of a ship's physical construction, when its structural backbone is first assembled.

ASuW (Anti-Surface Warfare): Naval operations aimed at engaging and destroying enemy surface ships.

VL-SRSAM: A Vertical-Launch Short-Range Surface-to-Air Missile system used for close-in air defence aboard warships.

⚡ UNIQUE FACT

The NGMV programme marks Cochin Shipyard's first-ever venture into building weapon-intensive combat vessels, despite the yard's long experience building India's first indigenous aircraft carrier, INS Vikrant.

⚠ EXAM TRAP

Don't confuse 'keel laying' (the formal start of a ship's physical construction) with a ship's actual completion or commissioning — NGMV's keel-laying is an early construction milestone, not a finished warship.

📌 PRELIMS MEMORY BANK

- First vessel: 'BY 531,' keel laid 18 September 2026
- Builder: Cochin Shipyard Limited (CSL)
- Contract: ₹9,805 crore for 6 vessels, signed March 2023
- Armament: BrahMos missiles, VL-SRSAM, advanced radars
- Speed: up to 33-35 knots; crew: ~80 personnel

PRACTICE MCQ · UPSC PRELIMS STYLE

Cochin Shipyard Lays Keel for First NGMV

With reference to the Next Generation Missile Vessel (NGMV) programme, consider the following statements:

1. The keel-laying of the first vessel marks its formal commissioning into the Indian Navy.
2. The vessels are being built at Cochin Shipyard Limited.
3. The vessels are planned to be equipped with BrahMos missiles.

Which of the statements given above is/are correct?

(a) 2 and 3 only

(b) 1 and 2 only

(c) 1 and 3 only

(d) 1, 2 and 3

✓ **Correct Answer: (a) 2 and 3 only**

SOLUTION EXPLAINED

① THROUGH LOGICAL ANALYSIS

Keel-laying is explicitly the formal START of a ship's physical construction, not its commissioning into service — a statement equating the two conflates the earliest and latest milestones in a warship's build timeline.

② THROUGH FACTUAL KNOWLEDGE

NGMVs are being built by Cochin Shipyard Limited; and they are planned to be armed with BrahMos missiles alongside VL-SRSAM and advanced radars.

GS PAPER III · DEFENCE TECHNOLOGY · LOITERING MUNITIONS

Geran-2 Drones Found Packed with Western Components

NEWS IN BRIEF

- An OCCRP investigation revealed in September 2026 that Russia's Geran-2 drones rely heavily on foreign-sourced parts.
- Geran-2 is Russia's domestically-produced version of Iran's Shahed-136 'suicide drone,' assembled in Tatarstan since 2023.
- The drone carries a 40-90 kg warhead, flies at ~180 km/h, and can reach a range of up to 2,000 km.
- Newer jet-powered variants, Geran-4 and Geran-5, fly faster and are harder to intercept.

KEY CONCEPTS EXPLAINED

One-Way Attack Drone: An unmanned aircraft that destroys itself by crashing into its target, carrying an explosive payload instead of returning to base.

Loitering Munition: A broader weapon category that can circle over an area before striking, of which one-way attack drones are one type.

Sanctions Evasion: The practice of obtaining restricted foreign technology through indirect channels despite formal export bans.

⚡ UNIQUE FACT

Despite facing some of the toughest sanctions in modern history, investigators found that only a few dozen of the hundreds of components in a Geran-2 drone are actually of Russian origin — most come from the US, China and Europe.

⚠ EXAM TRAP

Don't confuse Geran-2 (Russia's domestically-produced version) with the original Iranian Shahed-136 — while based on the same design, Geran-2 refers specifically to the Russian-manufactured and upgraded variant.

📌 PRELIMS MEMORY BANK

- Based on: Iran's Shahed-136 'suicide drone'
- Russian production site: a plant in Tatarstan (since 2023)
- Speed: ~180 km/h; Range: up to 2,000 km; Warhead: 40-90 kg
- Newer variants: jet-powered Geran-4, Geran-5 (faster, harder to intercept)
- 2026 finding: majority of components are foreign-sourced despite sanctions

PRACTICE MCQ · UPSC PRELIMS STYLE

Geran-2 Drones Found Packed with Western Components

With reference to Russia's Geran-2 drone, consider the following statements:

1. It is based on the Iranian-designed Shahed-136 drone.
2. The majority of its electronic components are manufactured domestically within Russia.
3. Newer variants of the drone use jet propulsion for higher speed.

Which of the statements given above is/are correct?

(a) 1 and 3 only

(b) 1 and 2 only

(c) 2 and 3 only

(d) 1, 2 and 3

✓ Correct Answer: (a) 1 and 3 only

SOLUTION EXPLAINED

① THROUGH LOGICAL ANALYSIS

Investigations found only a FEW DOZEN of the drone's hundreds of components are Russian-made, with most sourced from the US, China and Europe — a statement claiming domestic majority sourcing contradicts this documented finding.

② THROUGH FACTUAL KNOWLEDGE

Geran-2 is based on Iran's Shahed-136 design; investigations found most of its components are foreign-sourced, not domestic; and newer variants like Geran-4 and Geran-5 use jet propulsion.

GS PAPER III · DEFENCE TECHNOLOGY · CYBERSECURITY

Indian Army Launches AASHVAST Labs for Drone Security

NEWS IN BRIEF

- The Indian Army inaugurated its first AASHVAST cyber laboratory in Delhi Cantonment on 14 August 2026.
- AASHVAST stands for Assessment and Analysis of Electronic Systems Hardware for Vulnerabilities and Security Threats.
- Labs scan military drones and electronics for hidden malicious code and firmware weaknesses, especially in Chinese-origin parts.
- Developed for the DG EME, the labs can detect around 14 categories of vulnerabilities; five more labs are planned nationwide.

KEY CONCEPTS EXPLAINED

Firmware: Low-level software embedded directly into a hardware device that controls its basic functions, often invisible to a regular user.

Backdoor (Cybersecurity): A hidden, unauthorised method of bypassing normal security to access or control a device remotely.

Supply Chain Security: Ensuring that components sourced from external or foreign vendors do not introduce hidden risks into a larger system.

⚡ UNIQUE FACT

AASHVAST labs don't just check whether a drone's visible hardware is genuine — they can detect hidden passwords, embedded encryption keys and unauthorised remote-access tools buried deep within a device's firmware.

⚠ EXAM TRAP

Don't assume AASHVAST checks only for GPS or navigation issues — its scope covers roughly 14 categories of hardware and software vulnerabilities, including hidden backdoors and firmware modifications.

📌 PRELIMS MEMORY BANK

- Full form: Assessment and Analysis of Electronic Systems Hardware for Vulnerabilities and Security Threats
- First lab inaugurated: 14 August 2026, Delhi Cantonment
- Operates under: Directorate General of Electronics and Mechanical Engineering (DG EME)
- Planned expansion: 6 labs nationwide
- Vulnerability categories detected: ~14

PRACTICE MCQ · UPSC PRELIMS STYLE

Indian Army Launches AASHVAST Labs for Drone Security

With reference to the Indian Army's AASHVAST laboratories, consider the following statements:

1. They are designed exclusively to test the physical durability of military drones.
2. They operate under the Directorate General of Electronics and Mechanical Engineering.
3. They can detect hidden backdoors and unauthorised firmware modifications in electronic systems.

Which of the statements given above is/are correct?

(a) 2 and 3 only

(b) 1 and 2 only

(c) 1 and 3 only

(d) 1, 2 and 3

✓ **Correct Answer: (a) 2 and 3 only**

SOLUTION EXPLAINED

① THROUGH LOGICAL ANALYSIS

AASHVAST is explicitly designed to go beyond conventional physical inspections, focusing on hidden software, firmware and hardware-level cybersecurity risks — a statement restricting its function to physical durability testing misses its core purpose entirely.

② THROUGH FACTUAL KNOWLEDGE

AASHVAST labs operate under the Directorate General of Electronics and Mechanical Engineering; and they are specifically designed to detect hidden backdoors and unauthorised firmware modifications.



SECTION

Biotechnology & Health

08 Naegleria fowleri — The 'Brain-Eating Amoeba'

GS PAPER III · BIOTECHNOLOGY · PUBLIC HEALTH

Naegleria fowleri — The 'Brain-Eating Amoeba'

NEWS IN BRIEF

- North Carolina health officials confirmed a teenager died from Naegleria fowleri infection in September 2026.
- The amoeba is a free-living organism found naturally in warm freshwater like lakes, ponds and hot springs.
- Infection occurs only when contaminated water is forced up the nose, letting the amoeba reach the brain.
- The resulting disease, PAM, is extremely rare but has a fatality rate exceeding 97%.

KEY CONCEPTS EXPLAINED

Primary Amoebic Meningoencephalitis (PAM): A rare, rapidly fatal brain infection caused by Naegleria fowleri reaching the brain via the nasal passage.

Free-Living Amoeba: A single-celled organism that survives independently in the environment, unlike parasites that require a host to live.

Thermophilic Organism: An organism, like Naegleria fowleri, that thrives in unusually warm temperatures, explaining its prevalence in warm freshwater.

⚡ UNIQUE FACT

Naegleria fowleri is completely harmless if swallowed — infection can only occur if contaminated water is forced up the nose, reaching the brain via the olfactory nerve.

⚠ EXAM TRAP

Don't confuse Naegleria fowleri infection risk with drinking contaminated water — the amoeba only causes disease when water enters through the nose, not through ingestion via the mouth.

📌 PRELIMS MEMORY BANK

- Organism: Naegleria fowleri, a free-living, heat-loving amoeba
- Disease caused: Primary Amoebic Meningoencephalitis (PAM)
- Route of infection: contaminated water forced up the nose (not swallowing)
- Fatality rate: over 97%; death often within ~5 days of symptoms
- US case rate: fewer than 10 per year; found in warm lakes, ponds, hot springs

PRACTICE MCQ · UPSC PRELIMS STYLE

Naegleria fowleri — The 'Brain-Eating Amoeba'

With reference to Naegleria fowleri, consider the following statements:

1. Infection commonly occurs through drinking contaminated water.
2. It is a free-living amoeba that thrives in warm freshwater environments.
3. The disease it causes has a very high fatality rate once symptoms begin.

Which of the statements given above is/are correct?

(a) 2 and 3 only

(b) 1 and 2 only

(c) 1 and 3 only

(d) 1, 2 and 3

✓ **Correct Answer: (a) 2 and 3 only**

SOLUTION EXPLAINED

① THROUGH LOGICAL ANALYSIS

Naegleria fowleri infection specifically requires contaminated water to enter through the nose, not the mouth — swallowing it causes no illness at all, so a statement attributing infection to drinking water directly contradicts its defining transmission route.

② THROUGH FACTUAL KNOWLEDGE

Naegleria fowleri is a free-living amoeba thriving in warm freshwater; and the disease it causes, PAM, has a fatality rate exceeding 97% once symptoms begin.



SECTION

ICT & Emerging Tech

09 India's Rare Earth Magnet Push Gains Momentum

GS PAPER III · ICT & EMERGING TECH · CRITICAL MINERALS

India's Rare Earth Magnet Push Gains Momentum

NEWS IN BRIEF

- 20 companies, including L&T, Coal India and ReNew, bid to set up NdFeB magnet units under a ₹7,280 crore scheme.
- The scheme targets 6,000 tonnes of annual sintered NdFeB magnet production, split across five facilities.
- India currently imports nearly 100% of its rare earth magnets despite holding the world's 5th-largest reserves.
- Analysts estimate the scheme will meet only ~44% of India's projected 2035 magnet demand.

KEY CONCEPTS EXPLAINED

NdFeB Magnet: A 'sintered' permanent magnet made from Neodymium, Iron and Boron, offering the highest magnetic strength of any commercial magnet type.

Sintering: A manufacturing process that compacts and heats powdered material to fuse it into a solid magnet without fully melting it.

Rare Earth Element: A group of 17 chemically similar elements, including neodymium, that are difficult to extract and refine despite not always being geologically rare.

⚡ UNIQUE FACT

Despite holding the world's fifth-largest rare earth reserves, India currently imports virtually 100% of its finished rare earth magnets — highlighting a gap between having raw resources and having the refining expertise to use them.

⚠ EXAM TRAP

Don't assume India's new magnet scheme will fully solve its import dependence — even at full capacity, it is projected to meet only about 44% of India's total magnet demand by 2035.

📌 PRELIMS MEMORY BANK

- Scheme outlay: ₹7,280 crore; Target: 6,000 tonnes/year (sintered NdFeB)
- Current import dependence: ~100% of finished magnets
- India's rare earth reserves: world's 5th largest
- Bids received: 20 companies (L&T, Coal India, ReNew, others)
- Projected 2035 demand coverage: only ~44% by this scheme

PRACTICE MCQ · UPSC PRELIMS STYLE

India's Rare Earth Magnet Push Gains Momentum

With reference to India's rare earth magnet manufacturing scheme, consider the following statements:

1. India currently manufactures the majority of its rare earth permanent magnets domestically.
2. The scheme targets sintered Neodymium-Iron-Boron (NdFeB) magnet production.
3. The scheme's planned capacity is projected to meet all of India's future magnet demand by 2035.

Which of the statements given above is/are correct?

(a) 2 only

(b) 1 and 2 only

(c) 2 and 3 only

(d) 1, 2 and 3

✓ **Correct Answer: (a) 2 only**

SOLUTION EXPLAINED

① THROUGH LOGICAL ANALYSIS

India is explicitly described as importing nearly 100% of its finished rare earth magnets currently, and analysts project the new scheme will cover only about 44% of future demand — statements claiming domestic majority production today or full demand coverage by 2035 both contradict these figures.

② THROUGH FACTUAL KNOWLEDGE

India currently imports nearly all its rare earth magnets; the scheme specifically targets sintered NdFeB magnet production; and it is projected to meet only about 44% of 2035 demand, not all of it.