

90. Consider the following statements with respect to the AI Impact Summit, 2026 held in New Delhi :

1. The Summit's intellectual framework was based on three foundational Sutras : People, Planning, and Progress.
2. The Preamble of the Summit stresses Democratising AI Resources, which acknowledges the Charter for Democratic Diffusion of AI as a binding framework to support locally relevant innovation and strengthen resilient AI ecosystems while respecting national laws.
3. The New Delhi Declaration on AI Impact was structured around seven Chakras (Pillars), which included Access for Social Empowerment, AI for Science, and Secure and Trusted AI.

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)



"Nvidia's market cap now surpassed Microsoft's, marking a historic moment for the semiconductor giant. Analysts predict continued growth, driven by AI demand and strong profitability across its data center, professional, and gaming segments. The company's leadership in AI chips remains a key competitive advantage." — *Financial Times*, 10/20/2023.

Compound Semiconductors

Global AI chip demand is projected to reach 100 billion units by 2030, with high-end AI chips leading the growth.

Silicon Carbide (SiC) adoption is accelerating, particularly in power electronics and high-frequency applications.

Strategic Importance: US, China, Japan, EU lead in SiC technology, with significant investments in R&D.

Geopolitics of Silicon

US CHIPS and Science Act, 2022: \$52.7 billion for domestic chip production, with incentives for high-performance computing.

EU Chips Act, 2022: €43 billion, targets 20% of global chip market by 2030.

Japan's Strategy: Focus on advanced packaging and specialized chips for AI and automotive.

US export controls on China: Restricting access to advanced semiconductor technology, impacting China's AI development.

China's response: "Big Project" Phase 1, \$475 billion (May 2024) for semiconductor self-reliance.

AI chip, especially: The only company in the world to have a 7nm chip, and the only one to have a 5nm chip.

Taiwan risk: TSMC's role in global chip supply chain, especially for high-end chips.

Critical Minerals & Supply Chain

National Critical Mineral Mission (NCMM): Approved January 2023, aims to secure supply of critical minerals.

Key minerals: Lithium, cobalt, graphite, rare earths, and others.

India's Critical Mineral Strategy (2024): Focus on domestic production and secure supply chains.

China's dominance: Controls over 80% of rare earth processing globally.

Global trends: Increasing demand for critical minerals in AI, EVs, and renewable energy.

India's strategy: Focus on domestic production and secure supply chains.

Aug 2024	EU AI Act enters force	World's first comprehensive AI law; phased enforcement to Aug 2026
Feb 2025	AI Action Summit · Paris — India and France co-chairs	Paris Declaration on Inclusive and Sustainable AI; 60+ signatories. US and UK declined to sign.
Jul 2025	US "AI Action Plan" released by Trump administration	Replaced Biden's Oct 2023 Executive Order; emphasises export, light regulation
Feb 2026	AI Impact Summit · India (New Delhi)	India hosted the 3rd global AI summit; focus on "AI for All — Sustainable, Inclusive, Sovereign"



Artificial Intelligence — The Sovereign Compute Era

Between **Bletchley (2023)** and the **India AI Impact Summit (2026)**, AI governance has shifted from voluntary commitments to legislated risk-tiering. India's IndiaAI Mission anchors the Global South's claim to "sovereign AI."

IndiaAI Mission

Approved: Union Cabinet, **7 March 2024**.

Outlay: **₹10,371.92 crore** over 5 years.

Implementing agency: **"IndiaAI" — Independent Business Division (IBD) under Digital India Corporation, MeitY.**

Seven Pillars:

- **IndiaAI Compute Capacity** — **public cloud of 10,000+ GPUs** (later expanded to 18,693 GPUs empanelled by January 2025; **34,000+ GPUs by January 2026**) on PPP basis; subsidised compute for startups, academia.
- **IndiaAI Innovation Centre (AIIC)** — develop indigenous foundation models, particularly **multilingual/Indic LLMs** with IIT Bombay, IIT Madras, IISc, IIIT Hyderabad.
- **IndiaAI Datasets Platform (AIKosh)** — unified non-personal data repository for AI training; launched **aikosh.indiaai.gov.in** in March 2025.
- **IndiaAI Application Development Initiative** — funds use-case AI applications across agriculture, health, education, mobility.
- **IndiaAI FutureSkills** — UG/PG/PhD AI courses in Tier 2/3 cities; AI labs in universities.
- **IndiaAI Startup Financing** — early-stage capital for deep-tech AI startups.
- **Safe & Trusted AI** — indigenous tools for bias audit, deepfake detection,

Scanned by Camera Scanner under MeitY (announced

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Compound Semiconductors

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Geopolitics of Silicon

US CHIPS and Science Act, 2022 — India has demands for a 10% share in the global chip market. **EU Chips Act, 2023** — India has demands for a 10% share in the global chip market. **UK Chips Act, 2023** — India has demands for a 10% share in the global chip market.

China's support: "Big Four" (USA, EU, UK, Japan) — AIIC (AI Innovation Centre) will develop indigenous foundation models, particularly multilingual/Indic LLMs with IIT Bombay, IIT Madras, IISc, IIIT Hyderabad.

Critical Minerals & Supply Chain

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Global AI Governance Timeline

Year	Event	Significance
2023	AI Safety Summit, Bletchley, UK	First global AI safety summit, 29 nations, 120+ leaders.
2024	AI Safety Summit, Bletchley, UK	First global AI safety summit, 29 nations, 120+ leaders.
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EU AI Act — Risk Pyramid

Unacceptable risk (banned) — AI systems that pose unacceptable risks to fundamental rights and freedoms. **High risk** — AI systems that pose high risks to fundamental rights and freedoms. **Limited risk** — AI systems that pose limited risks to fundamental rights and freedoms. **Minimal risk** — AI systems that pose minimal risks to fundamental rights and freedoms.

60. Which of the following statements about Rare Earth Elements (REEs) and Critical Minerals is/are correct ?

1. Modern technological innovations including Artificial Intelligence, robotics and space exploration extensively utilise Rare Earth Elements (REEs). ✓
2. China has the highest share in mining of REEs followed by India.
3. The Government of India launched the National Critical Mineral Mission (NCMM) in 2025 to establish a robust framework for self-reliance in the critical mineral sector. ✓
4. Rare Earth Elements are a set of 13 metallic elements. ✓

Select the answer using the code given below :

(a) 1 and 3 only

(b) 3 only

(c) 1, 3 and 4

(d) 1, 2

Geopolitics of Silicon

US CHIPS and Science Act, 2022: \$52.7 billion for domestic fabs + R&D; key recipients: TSMC Arizona, Intel Ohio/Arizona, Samsung Texas, Micron New York. **Trump administration (2025)** renegotiating awards; some clawback talk.

EU Chips Act, 2023: €43 billion; target — **20% of global chip market by 2030**.

Chip 4 Alliance: **US + Japan + South Korea + Taiwan** — designed to exclude China from advanced node supply chain.

US export controls on China: October 2022 (initial), tightened October 2023, December 2024, January 2025 — restrict EUV/DUV tools, HBM memory, advanced GPUs (**Nvidia H100/H200/B200 to China**).

China's response: "Big Fund" Phase III — **\$47.5 billion (May 2024)**; SMIC's 7 nm via DUV multi-patterning (Huawei Mate 60 Pro chip).

ASML monopoly: The only company in the world producing **EUV (extreme ultraviolet, 13.5 nm wavelength) lithography machines** — each unit ~€350 million; High-NA EUV at ~€380 million.

Taiwan risk: TSMC fabricates **~90% of world's leading-edge chips** — concentration risk drives "friend-shoring" to India, US, Japan, EU.

Critical Minerals & Supply Chain

National Critical Mineral Mission (NCMM): Approved January 2025; outlay ~₹16,300 crore; identifies 30 critical minerals including **lithium, cobalt, germanium, gallium, graphite, rare earths**.

KABIL (Khanij Bidesh India Ltd) — JV of NALCO + HCL + MECL; acquired **lithium blocks in Argentina (2024)**.

India's lithium discovery: 5.9 million tonnes inferred reserves in **Reasi, J&K** (Geological Survey of India, 2023); first auction failed twice (2024), restructured in 2025.

Scanned by  **Camera Scanner** globally; in 2025 China imposed export controls on gallium, germanium, antimony, graphite.

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Artificial Intelligence — The Sovereign Compute Era

India's AI Mission

Global AI Governance Timeline

EU AI Act — Risk Pyramid

India's AI Governance — The Domestic Story

AI Safety Institute of India (ASII)

India's Indigenous AI Ecosystem

AI Safety Institute of India (ASII)

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AI Safety Institute of India (ASII)

India's Indigenous AI Ecosystem

AI Safety Institute of India (ASII)

67. Which of the following statements with regard to Large Language Models (LLMs) used in machine learning is/are correct ?

1. LLMs assign probabilities to the next possible words and then pick the one with the highest probability. ✓
2. LLMs process data through mathematical optimization to minimise prediction errors. ✓
3. LLMs produce unbiased outputs. ✗

Select the answer using the code given below :

- (a) 1 only
- ✓ (b) 1 and 2 only
- (c) ~~2 and 3 only~~
- (d) ~~1, 2 and 3~~

Large Language Models — Anatomy & Frontier

An LLM is a statistical model of language scaled to billions of parameters and trained on internet-scale text. The 2024–2026 frontier added *reasoning*, *multimodality* and *agency*.

How an LLM Works · Minimum Viable Mental Model

Token: Sub-word unit (e.g. "transform" + "er"). Modern LLMs see text as sequences of tokens, not characters or words.

Parameter: A learnable weight in the neural network. GPT-3 = 175 billion; GPT-4 estimated ~1.7 trillion (mixture-of-experts); Llama 3 70B = 70 billion.

Transformer architecture: Introduced in 2017 paper "*Attention Is All You Need*" (Vaswani et al., Google). Replaced recurrent networks with the **self-attention mechanism** — model weighs every token against every other.

Pre-training: Predict the next token on trillions of tokens of internet text → builds base model.

Fine-tuning + RLHF (Reinforcement Learning from Human Feedback): Human raters rank model outputs; reward model trained; base model aligned. **Constitutional AI** (Anthropic) replaces human raters with AI-driven principles for parts of this process.

Inference: Generate next token given prompt + context window. Context window: GPT-4o ~128K tokens; Gemini 1.5 Pro 1M–2M tokens; Claude Opus 4.x ~200K.

Hallucination: Flawed by lack of explicit reasoning because the model is a probability machine, not a knowledge base.

74. Which of the following statements with regard to the National Quantum Mission (NQM) is/are correct ?

1. It aims at developing intermediate-scale quantum computers with 50 – 1000 physical qubits. ✓

2. Its implementation includes setting up of four Thematic Hubs (T-Hubs) in academic and national R&D institutes across India. ;

Select the answer using the code given below :

(a) 1 only

(b) 2 only

✓ (c) Both 1 and 2

(d) Neither 1 nor 2

[illegible]

Drone Federation of India (DFI) — Industry body, 150 member companies
runs Short Drone Mithozaw with MoCA.

[illegible]

India's **Operation Sindoor** on 7 May 2025 in response to the Pakistan terror attack (22 April 2025):

Featured the largest combined use of **Indigenous fighter jets, Bunkers, SCARF, and counter-drone systems** by Indian forces.

Demonstrated effectiveness of **disseminated integrated air-defence network** and indigenous **anti-drone grids** in neutralising swarms of **Turkish-origin drones** used against Indian cities.

The Russia-Ukraine war consumes an estimated 93,000+ FPV (first person view) kamikaze drones per month. The conflict has compressed drone-warfare evolution from years to weeks — directly shaping Indian doctrine and procurement.

Robotics — From Factory Arm to Humanoid

Released by: **Wired** | **25 October 2024.**

Goal: Position India as a **global leader in robotics by 2026**.

Four foundational pillars:

- **Institutional Framework** → empowered apex body (**National Robotics & AI Mission** proposed).
- **Funding & R&D** → building hardware, software, components.
- **Talent** → robotics education across IITs/IITJVs/universities.
- **Standards, safety, ethics** → India-robotics safety standards.

Priority sectors: Manufacturing, agriculture, healthcare, national security.

ASTROIDE Ltd & Robotics Technology Park, Hitec Bypass Road — 411 004

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Camera Scanner

48. Which one of the following pairs of semiconductor plants in India and their locations is **not** correctly matched ?

(a) CG Power and Industrial Solutions Pvt. Ltd. in partnership with Renesas Electronics and STARS Microelectronics : Gujarat

~~(b)~~ Tata Semiconductor Assembly and Test Pvt. Ltd. : Assam

(c) HCL-Foxconn Joint Venture India Chip Ltd. : Madhya Pradesh

~~(d)~~ SicSem Pvt. Ltd. : Odisha

Approved Units in India (as of May 2026)

#	PROJECT	LOCATION	TYPE / NODE	INVESTMENT	ST/
1	Tata Electronics – PSMC	Dholera, Gujarat	Fab - 28/40/55/90/110 nm; 50,000 WSPM	₹91,000 cr	Co firs tar

2	Micron Technology	Sanand, Gujarat	ATMP (DRAM/NAND)	₹22,516 cr (\$2.75B)	Fir in- —
3	CG Power – Renesas – Stars Microelectronics	Sanand, Gujarat	OSAT (Analog/Mixed-signal/Power)	₹7,600 cr	Un cor
4	Kaynes Semicon	Sanand, Gujarat	OSAT	₹3,307 cr	Un cor
5	Tata Semiconductor Assembly & Test (TSAT)	Jagiroad, Assam	OSAT — flip-chip, wire-bond	₹27,000 cr	Co be 20: cor 20:
6	HCL – Foxconn JV	Jewar, Uttar Pradesh	OSAT — Display Driver ICs	₹3,706 cr	Ap 20:
7	Kaynes Technology (2nd unit)	Sanand, Gujarat	OSAT extension	₹3,300 cr	Ap 20:
8	Tata-Bhargav SiCSem	Bhubaneswar, Odisha	SiC Compound semiconductor fab	₹1,200 cr	Ap 20:
9	3D Glass Solutions / SiCSem	Sanand	Specialty packaging	~₹2,000 cr	Ap 20:

PRELIMS HOOK

First "Made-in-India" chip: Rolled out from **Micron's Sanand ATMP**

— formally inaugurated; the first

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75. Which of the following statements with regard to India's Deep Ocean Mission is/are correct ?

1. It was launched by the Ministry of Ports, Shipping and Waterways, Government of India.
2. Matsya-6000 has been designed to carry 3 people for deep sea exploration. ✓
3. Samudrayaan is a project under this mission. ✓

Select the answer using the code given below :

- (a) 1 only
- ✓ (b) 2 and 3 only
- (c) 1 and 2 only
- (d) 1, 2 and 3

Scheme / Mission	Launch	Key Points
National Quantum Mission	Cabinet 19 Apr 2023	₹6,003.65 cr (2023–2031); 4 Technology Hubs ; targets 50–1,000 qubit computers in 8 yrs; 2,000 km Quantum Key Distribution (QKD)
Vigyan Dhara UMBRELLA 2024	Aug 2024	Umbrella scheme merging 3 schemes of DST: SVAJTI, RDI, INSP-SHE etc.; ₹10,579.84 cr
Anusandhan NRF	2023 Act	National Research Foundation; ₹50,000 cr; 70% non-govt funding goal; replaces SERB
BioE3 Policy	Cabinet 24 Aug 2024	Biotechnology for Economy, Environment & Employment; high-performance biomanufacturing; MoST nodal
Genome India Project	DBT	Completed January 2025 — 10,000 Indian genomes sequenced; personalised medicine

Deep Ocean Mission (Samudrayaan)	Cabinet June 2021	₹4,077 cr; Matsya-6000 manned submersible (6 km depth by 2028); polymetallic nodule exploration; MoES
PRITHVI Scheme	Cabinet 2024	Umbrella under MoES: ₹4,797 cr; integrates ACROSS, O-SMART, PACER, SAGE, REACHOUT
iDEX (Defence)	2018	Innovations for Defence Excellence; ADITI scheme (₹25 cr per project) March 2024
Agnipath Scheme	14 June 2022	4-year Agniveer tour; 25% retention; armed forces recruitment overhaul
PM Gati Shakti NMP ★	13 Oct 2021	National Master Plan for Multi-Modal Connectivity; GIS-based portal; 16 ministries onboarded
Biopharma SHAKTI	Feb 2026	₹10,000 cr / 5 yrs; 3 new NIPERs; biologics & biosimilars; clinical trial sites
BUDGET 2026-27		
Earth Corridors notified in Budget 2026-27 (Odisha, Kerala, AP, TN)		

Mission 8: Deep Ocean Exploration

- It aims to scientifically explore the deep oceans towards improving India's understanding of the blue frontier.
- It will address issues arising from long term changes in the ocean due to climate change.
- The focus areas cover:
 - the development of technologies for deep sea exploration and exploitation of living (biodiversity) and non-living (minerals) resources
 - development of underwater vehicles and underwater robotics
 - development of ocean climate change advisory services
 - technological innovations and conservational methods for sustainable utilisation of marine bio-resources
 - offshore based desalination techniques and renewable energy generation
- Lead Agencies:
 - Ministry of Earth Sciences

- Department of Biotechnology
- Department of Space
- Ministry of New and Renewable Energy
- Oil and Natural Gas Corporation
- Geological Survey of India
- National Hydrographic Office
- National Biodiversity Authority

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51. Which of the following statements regarding the features of blockchain technology are correct ?

1. Records stored in the database may be made visible to relevant stakeholders without risk of alteration. ✓
2. Copies of the entire database are stored on multiple computers on a network, syncing within seconds. ✓
3. Consortium blockchain is a blend of public and private blockchains allowing selective data access.
4. Mathematical algorithms make it impossible to change or delete any data once recorded and accepted. ✗

Select the answer using the code given below :

- (a) ✓ 1 and 3
- (b) ~~2 and 4 only~~
- (c) ~~1, 2 and 4~~
- (d) ~~1 and 4 only~~

BLOCKCHAIN TECHNOLOGY:

Drones

- It is a shared immutable ledger that facilitates the process of recording transaction & tracking of assets in a business work & each transaction is validated by every member.
- They are a new data structure that is secure, cryptography-based, and distributed across a network.
- The blockchain is an incorruptible digital ledger of transactions that can be programmed to record virtually everything of value where each list of records in a Blockchain is called a block.
- So a blockchain is a continuously growing list of records called blocks, which are linked and secured.
- Every transaction is recorded everywhere & changes cannot be made in the ledger by any one member.
- The technology supports cryptocurrencies E.g. Bitcoin.
- Applications of Blockchain technology:
 - o Land records & Smart contracts
 - o Forensic audit.
 - o Record keeping & Asset protection
 - o Supply chain management
 - o In elections to promote remote voting.
 - o Payment processing
- India Blockchain Strategy Paper By NITI Aayog:
 - o to promote use of Blockchain for cryptocurrencies.
- NIC has set up centre of excellence for Blockchain to promote use and facilitate rapid adoption
- GCCFC - Global conference on Criminal Finances & Cryptocurrencies:
 - o It is organised by Interpol, Europol & Basel institute on governance
 - o to strengthen knowledge, expertise, best practices for investigating Financial Crimes & cryptocurrencies

PAKISTAN → 420
CHINA → 840

encoding / decoding key



Distributed



→ anonymity

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- o Blockchain Operated New Debt Instrument by World Bank is the world's first public blockchain bond created, allocated, transferred and managed by using blockchain technology.

33. Which of the following best explain(s) the rationale for protecting mangrove ecosystems in the context of climate resilience ?

- Mangroves halophytic*
1. Mangroves reduce tidal energy and store freshwater, making them ideal sites for paddy cultivation in saline estuarine belts. *all*
- phenomenon*
2. Their salt-sensitive roots filter seawater, making mangroves key to converting coastal land into freshwater aquaculture zones. *OK* ✓
3. ✓ By withstanding tidal surges and offering biomass resources, mangroves function both as natural bio-shields and livelihood bases for rural communities. ✓ *OK*

Select the answer using the code given below :

(a) 1 only

(b) 1 and 2

(c) 2 and 3

(d) 3 only

MANGROVES

They occur in coastal, intertidal zone of tropics & sub tropics. They are a group of halophytic plants species which is known as the salt tolerant forest ecosystem that includes soft & swampy, mostly trees & shrubs, with broad, leathery, evergreen leaves.

- The roots protrude into the air like sticks or loops or crop in serpentine manner all around the tree exposed fully during the low tide. These roots are meant for taking in air for respiration (Pneumatophores), as the water logged soil is deficient.
- Certain mangroves give birth to line seedlings instead of shedding their fruits or seeds. This is called vivipary.
- They are found between tropic of cancer & tropic of capricorn.
- Sewri mangrove park --- Maharashtra & karnataka.

COALITION

Coalition for Disaster Resilient Infrastructure (CDRI)

India-led global initiative launched at UNGA 2019. 39 members. Focus:

nature-based solutions for disaster risk reduction. Relevant: mangroves as

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37. Which of the following statements with regard to the arrival of Amur Falcons at Doyang Lake in Nagaland each year from Mongolia is/are correct ?

1. It showcases how sustained local conservation efforts can contribute to the arrival and protection of international migratory birds. ✓
2. It reflects the global success of advanced tracking technologies that guide migratory birds back to their stopover sites. ✓
3. It confirms that Amur Falcons have adapted to permanent residency in India due to favourable habitat changes. ✗

Select the answer using the code given below :

- (a) 1 only
- ~~(b)~~ 1 and 2
- (c) 2 and 3
- (d) 3 only

MONOGAMOUS PAIRING

○ AMUR FALCONS

- These falcons form monogamous pairs, migrating together over long distances

AMUR FALCON

(*Falco amurensis*)

Recently, Manipur's Tamenglong district announced an immediate **ban** on hunting, catching, killing, and selling the Amur falcon.

In winter, they migrate to Southern and East Africa.

THREATS

Illegal trapping and killing during migration and habitat loss.

DIET

Locusts Termites

Serving as natural pest control.

AMUR FALCONS IN INDIA

Nagaland, Manipur, Arunachal Pradesh, and parts of Assam are their midway halts.

Also Known as **Kahualpuina** in Nagaland and Manipur.

Nagaland is known as the "Falcon Capital of the World".

The **Doyang Reservoir** in (Pangti Village) Nagaland is a famous roosting site for Amur falcons and a successful conservation example.

Named after the Amur River, which flows through its breeding grounds.

Small falcons with females being larger

Distinct eye masks and yellow ceres

World's longest-distance migrating raptor.

Breeds in Siberia, Mongolia and Northern China.

They fly 3000 km **non-stop** over the Arabian Sea without resting during migration.

IUCN STATUS

LEAST CONCERN LC

CMS

APPENDIX II

WPA, 1972

SCHEDULE I

SOCIAL BREEDING

○ GREATER FLAMINGOS

- Nest in colonies, engaging in synchronized movements and rituals before pairing

Avian Species

Amur Falcon



WPA, 1972
Schedule I



- Context
 - Manipur's Tamenglong district imposes a ban on hunting of Amur Falcon.
- Characteristics
 - It is locally known as 'Kahuaipuina' in Manipur.
 - Migratory raptor: Make voyage from breeding grounds in Russia and China to southern Africa. ◦ 22,000 km journey (longest sea crossing of any raptor)
 - Passes through Manipur and Nagaland.
 - Feeds on dragonflies that follow a similar migration path over Arabian Sea

The International Union for Conservation of Nature (IUCN)

Founded in 1948 and headquartered in Gland, Switzerland, is a premier global authority on biodiversity conservation.

It is a unique union of government and civil society organizations.

Its core significance lies in producing the IUCN Red List of Threatened Species, the World Conservation Congress, and its role in influencing major environmental conventions.

32. With respect to the Western Hoolock Gibbons, which of the following statements is/are correct ?

1. A Sanctuary in North-east India is home to this ape species listed as Endangered in the International Union for Conservation of Nature (IUCN) Red List. ✓
2. They have specialized brachiation and can easily swing between trees. ✓
3. They possess a strong and heavy build like gorillas, yet are remarkably agile tree climbers.

Select the answer using the code given below :

- (a) 1 only
- ☒ (b) 1 and 2
- (c) 2 and 3
- (d) 3 only

अगला महत्वपूर्ण सेट: प्रजातियां

ENVIRONMENT SERIES | UPSC PRELIMS PYQ BASED (LAST 30 YEARS)
पर्यावरण श्रृंखला | यूपीएससी प्रारंभिक परीक्षा PYQ आधारित (पिछले 30 वर्ष)

Match the Following

1. हूलाक गिबबन
HOOLOCK
GIBBON



Known for its mass nesting ("arribada") at sites like Gahirmatha.

2. ओलिव रिडले कछुआ
OLIVE RIDLEY
TURTLE



Culturally significant national bird, protected under WPA Schedule I.

3. भारतीय तारा कछुआ
INDIAN STAR
TORTOISE



Apex predator of high-altitude cold deserts and mountains.

4. हिम तेंदुआ
SNOW LEOPARD



Known for its unique star-patterned shell, highly traded in the exotic pet market.

5. नीलगिरि तहर
NILGIRI TAHR



Crocodilian with a distinctive thin snout, found in deep, flowing rivers.

6. सुंदरी का पेड़
(मैंग्रोव)
SUNDARI TREE
(MANGROVE)



Dominant mangrove species in the Sundarbans, uses pneumatophores for breathing.

7. घड़ियाल
GHARIAL



Found only in the rainforests of Northeast India.

8. भारतीय मोर
INDIAN PEAFOWL



Mountain ungulate endemic to the Nilgiri Hills and Western Ghats.

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Solution in Next Poster! / समाधान अगले पोस्टर में!

Hoolock Gibbon

Western hoolock gibbon



Eastern hoolock gibbon



- Context
 - The National Board for Wildlife approved oil exploration in Assam's Hollongapar Gibbon Sanctuary.
- Characteristics
 - Two types: western hoolock gibbon (*Hoolock hoolock*) and the eastern hoolock gibbon (*Hoolock leuconedys*).
 - Arboreal, diurnal, and highly territorial
 - Sexual dimorphism in fur color:
 - Eastern: Males are black; females light brown or golden
 - Western: Males black with white brows; females' orange-tan
- Habitat
 - Endemic to northeastern India
 - Eastern Hoolock Gibbon: Found in Arunachal Pradesh and parts of Assam
 - Western Hoolock Gibbon: Found in Assam, Meghalaya, Tripura, and Mizoram
- The National Board for Wildlife (NBWL)
 - An apex, statutory body in India established in 2003 under the Wildlife (Protection) Act, 1972, responsible for promoting wildlife conservation and advising the government on policy.
 - It is chaired by the Prime Minister and mandates approval for all projects inside or around National Parks and Sanctuaries.
- The Hoolongapar Gibbon Wildlife Sanctuary (WLS)
 - Formerly known as the Hollongapar Reserve Forest, is a protected area located in the Jorhat district of Assam.
 - The only sanctuary in India named after a primate species.

40. Ships from which of the following countries have to cross the Strait of Hormuz to reach out to the Indian Ocean ?

1. Bahrain

2. Syria ,

3. Qatar ,

4. Egypt ✓

Select the answer using the code given below :

(a) 1 and 2

(b) 1 and 3

(c) 2 and 3

✓ (d) 3 and 4

HORMUZ STRAIT



Context: Iran-US tensions + naval incidents.

Key Facts

- Strait between the Persian Gulf and the Gulf of Oman
- Between Iran-Oman
- It provides the only sea passage from the Persian Gulf to the open ocean.
- 20% global petroleum trade

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29.

Which of the following statements with reference to Lake Turkana is/are correct ?

1. It is the largest desert lake in the world. ✓
2. The lake is situated in South Sudan along the eastern fringe of the Sahara desert. ✗
3. The lake is listed as a UNESCO World Heritage Site and is also referred to as the 'Jade Sea'. ✓

Select the answer using the code given below :

- (a) 1 only
- ✓ (b) 1 and 3 only
- (c) 2 and 3 only
- (d) 1, 2 and 3

2. LAKES (RIFT + PLATEAU)

Lake	Type	Countries	Notes
Victoria	Plateau lake	Uganda–Kenya–Tanzania	Largest freshwater lake by area
Tanganyika	Rift lake	Tanzania–DRC–Burundi–Zambia	2nd deepest lake globally
Malawi (Nyasa)	Rift lake	Malawi–Tanzania–Mozambique	Biodiversity hotspot
Turkana	Rift lake	Kenya–Ethiopia	Largest desert lake
Albert	Rift lake	Uganda–DRC	Nile source
Edward	Rift lake	Uganda–DRC	National parks nearby
Kivu	Rift lake	Rwanda–DRC	Methane gas reserves

9810783495, 8700482811, 8595269455

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39. Which of the following is/are the most significant implication(s) of obtaining Oeko-Tex certification for Eri Silk in the global textile industry ?

1. It allows Indian exporters to compete in high-end markets that prioritise chemical-free products. ✓
2. It confirms that Eri Silk meets international safety, environmental, and quality standards, enabling its entry into premium eco-conscious markets. ✓

Select the answer using the code given below :

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

- ERI SILK, ALSO KNOWN AS “**PEACE SILK / VEGAN SILK**”: A UNIQUE SILK DERIVED FROM THE ERI SILKWORM (**SAMIA RICINI**), PRODUCED **WITHOUT HARMING** THE MOTH INSIDE THE COCOON.
- PREDOMINANTLY PRODUCED IN **ASSAM**, WITH PRESENCE IN **MEGHALAYA, NAGALAND, MANIPUR**, AND OTHER NORTH-EASTERN STATES OF INDIA.
- IT IS A GEOGRAPHICAL INDICATION (**GI**) TAGGED PRODUCT FROM **ASSAM**.
- **OEKO-TEX CERTIFICATION**: RECENTLY AWARDED, ENSURING TEXTILES ARE FREE FROM HARMFUL SUBSTANCES AND PRODUCED IN ENVIRONMENTALLY FRIENDLY CONDITIONS.
 - THE OEKO-TEX CERTIFICATION IS EXPECTED TO HELP ERI SILK PENETRATE GLOBAL EXPORT MARKETS ESTABLISHING A STRONG INTERNATIONAL PRESENCE

**THE IAS AKADEMIA**

Type of Silk	Texture & Characteristics	Primary Use	Major Producing Regions
Mulberry Silk	Smooth, lustrous	High-quality garments	Karnataka, Andhra Pradesh, West Bengal, Tamil Nadu, Jammu & Kashmir (92% of total production)
Tropical Tasar Silk	Coarse, golden-colored	Traditional & semi-formal wear	Forest regions of Central & Eastern India
Oak Tasar Silk	Durable, rich texture, reared on oak trees	Premium textiles	Forest regions of Eastern India
Eri Silk	Soft, warm, distinct texture, associated with castor plant	Comfortable casual & traditional garments	Northeast India
Muga Silk	Unique golden-yellow color, durable with	Traditional Assamese	Assam (Exclusive)

Scanned by  Camera Scanner

- Karnataka>Andhra Pradesh>Assam>Tamil Nadu
- India - second-largest silk producer globally.

59. Which one of the following best describes the 'Crowding Out Effect' in the context of fiscal policy ?

- (a) A situation where private investment increases due to increased Government spending
- ☒ (b) A situation where Government borrowing leads to higher interest rates, which reduces private investment
- (c) A situation where an increase in taxes leads to increased private sector investment
- (d) A situation where Government spending has no impact on aggregate demand

Crowding-In Effect

Public capital expenditure attracts more private investment. Government's ₹12.2

lakh

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Camera Scanner

100. Which of the following countries are members of the European Union ?

1. Belarus
2. Poland
3. Germany , ✓
4. Switzerland ✗

Select the answer using the code given below :

- (a) 1, 2 and 4
- (b) 1 and 4 only
- (c) ✓ 2 and 3
- (d) 2 and 4 only

2. The European Union (EU) - 27 Nations & Trivia

The EU is an economic and political union. **Note:** Not all European countries are in the EU

Feature	Key Facts & Trivia (2026 Update)
Eurozone Growth	Bulgaria joined as the 21st nation to adopt the Euro on Jan 1, 2026 .
The "Big Three"	Germany (Economy), France (Military/Diplomacy), and Italy (Culture/Industry).
Smallest Member	Malta (Smallest area and population).
Largest Member	France (Land area); Germany (Population).
Economic Heart	The "Blue Banana" (The industrial corridor from Manchester to Milan).
Digital Pioneer	Estonia: 99% of government services are online. You can vote and file taxes from a sauna.
India Connection	India and the EU signed a historic Security & Defence Partnership in Jan 2026, focusing on the Indo-Pacific.

25. Consider the following statements with reference to the Sagarmala Programme of the Government of India :

- I. The Sagarmala Programme seeks to achieve port-led economic growth through cost-effective and sustainable coastal infrastructure. ✓
- II. The success of the Sagarmala Programme is reflected in significant growth in coastal and inland waterway shipping, along with improved global port rankings.
- III. Sagarmala 2.0 aims to position India as a global maritime innovation hub aligned with Atmanirbhar Bharat and Viksit Bharat 2047 visions. ✓

Which of the following relationships among the above statements is/are correct ?

1. Statement II validates the effectiveness of the strategies envisioned in statement I. ✓
2. Statement III extends the objectives of statement I by embedding them into a future-oriented innovation framework. ✓
3. Statement I contradicts statement III by focusing only on traditional infrastructure instead of modern innovation. ✗

Select the answer using the code given below :

- (a) 1 only
- ✓ (b) 1 and 2
- (c) 2 and 3
- (d) 3 only

Civil Aviation

Scheme / Initiative	Details
UDAN (Ude Desh Ka Aam Naagrik) ★	27 Oct 2016; ~1.5 crore passengers served; connects Tier-2/3 cities; viability gap funding
Modified UDAN ▢ (Budget 2025-26)	120 new destinations; 4 crore passengers target over 10 years
Seaplane VGF Scheme ▢ BUDGET 2026-27	Viability Gap Funding for seaplane operations; coastal/island connectivity

Ports, Shipping & Waterways

Scheme / Initiative	Details
Sagarmala ★	2015 — port-led development; port modernisation, connectivity, coastal community development
Maritime India Vision 2030	Long-term blueprint; 10-year roadmap; complemented by Maritime Amrit Kaal Vision 2047
Maritime Development Fund ▢	(Budget 2025-26) — ₹25,000 cr corpus; 49% Govt share
Shipbuilding Boost Package ▢	Cabinet Sep 2025 — ₹69,725 crore package to boost India's shipbuilding sector; tax holidays for shipyards
20 New National Waterways BUDGET 2026-27	To be operationalised; complements existing 111 National

Q. 43

Consider the following pairs of maritime initiatives:

Initiative	Description
1. Sagarmala	Port-led development
2. Maritime Vision 2030	Decadal blueprint for port, shipping & waterways
3. Maritime Development Fund	Budget 25-26 — ₹25,000 cr for shipbuilding & ports
4. Bharatmala	Coastal economic zones

Which of the pairs given above are correctly matched?

- a. 1, 2 and 3 only
- b. 1, 2 and 4 only
- c. 2, 3 and 4 only
- d. 1, 2, 3 and 4

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70. Which of the following statements with regard to Green Hydrogen is/are correct ?

1. It is decarbonized hydrogen obtained from natural gas reforming combined with carbon capture and storage (CCS). ✓
2. It is produced using electrolysis of water with electricity generated by renewable energy. ✓
3. National Green Hydrogen Mission of India aims for abatement of nearly 50 MMT of annual greenhouse gas emissions by 2030. ✓

Select the answer using the code given below :

- (a) 1 only
- (b) 2 and 3 only
- (c) 2 only
- ✓ (d) 1, 2 and 3

National Green Hydrogen Mission

► HOT

Launch

Cabinet 4 January 2023

Fund Type

Central Sector Scheme



Outlay

₹19,744 crore (SIGHT ₹17,490 cr + Pilots ₹1,466 cr + R&D ₹400 cr + Others)

Targets 2030

5 MMT/year green hydrogen | 125 GW renewables | ₹8 lakh crore investment | 6 lakh jobs |
50 MMT CO₂ abatement

SIGHT

Strategic interventions for Green Hydrogen Transition — electrolyser manufacturing & green hydrogen use incentives

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Q.40

The National Green Hydrogen Mission aims to achieve which of the following by 2030?

1. Production of at least 5 million metric tonnes (MMT) of green hydrogen per annum.
 2. Reduction of about ₹1 lakh crore in fossil fuel imports.
 3. Renewable energy capacity addition of 125 GW.
 4. Reduction of nearly 50 MMT of CO₂ emissions.
- a. 1, 2 and 3 only
 - b. 1, 3 and 4 only
 - c. 1, 2, 3 and 4
 - d. 2, 3 and 4 only

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~~(d)~~ 1, 2 and 3

73. Which of the following statements with regard to GenomeIndia Project is/are correct ?

1. It is a part of the Human Genome Project. ✓
2. The project is funded by the Department of Biotechnology (DBT), Government of India. ✓
3. Its primary aim is to build a catalogue of genetic diversity of the Indian population. ✓

Select the answer using the code given below :

- (a) 1 only
- (b) 2 and 3 only
- (c) 1 and 2 only
- ~~(d)~~ 1, 2 and 3

○ **GENOME INDIA PROJECT**

- It was started under the Ministry of Science & Tech. with the collaboration of institutions including IIS, IIT's.
- The aim is to build the grid of the Indian reference genome to fully understand the type & the nature of diseases & traits that comprise the diverse Indian population.

○ **IndiGen PROJECT**

- It is an initiative of Center for Cell & Molecular Biology which is under IIGB-Institute of Genomics & Integrative Biology & CSIR, Hyderabad.
- It does Mapping of Genomes of 1008 Indians.

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54. Which one of the following best describes the key objective of India's 'Open Network for Digital Commerce' (ONDC) initiative?

(a) To allow government control over all digital commerce transactions ✕

(b) To replace private e-commerce players ✕

✓ (c) To break the dominance of large e-commerce platforms by enabling interoperability across networks

(d) To mandate UPI-based payments for all online transactions

Scheme	Launch	Key Points
--------	--------	------------

Digital India ★
PYQ 2018

July 2015

Central Sector; 9 pillars — broadband highways, e-governance, digital literacy, electronics manufacturing

IndiaAI Mission

Cabinet 7
Mar 2024

₹10,371.92 cr / 5 yrs; **7 pillars** — Compute (GPU), Datasets, AI Innovation Centre, Startup Financing, Safe AI, App Development, Skilling. AI Safety Institute (Sep 2025).

BharatNet (NOFN)

2011
(renamed 2015)

Central Sector; broadband connectivity to all Gram Panchayats via OFC + wireless. **BharatNet 2.0** 2024 — last-mile, ~2 lakh GPs covered

ONDC

September 2022

Open Network for Digital Commerce; Section 8 non-profit; democratised e-commerce (open protocol, not walled garden)

BHASHINI

2022

National Language Translation Mission; AI-based real-time translation in 22 scheduled languages

Semicon India Programme

2021

₹76,000 cr; ISM under DIC; Tata-PSMC, Micron Sanand, HCL-Foxconn JV (May 2025 ₹3,706 cr)

India Semiconductor Mission 2.0

BUDGET 2026-27

Feb 2026

Equipment + materials manufacturing; full-stack Indian IP; industry-led R&D & training centres

Electronics Components Manufacturing Scheme (ECMS)

Budget 2026-27

Outlay **increased to ₹40,000 cr** from ₹22,919 cr

ONOS

Cabinet Nov 2024 (effective 1 Jan 2025)

One Nation One Subscription; ₹6,000 cr; access to **13,000+ international journals** for all government HEIs

DPDP Act, 2023

Notified 11 Aug 2023; Rules Jan 2025

Digital Personal Data Protection Act; **Data Protection Board**; consent-based; penalties up to ₹250 cr

66. Which of the following statements with regard to genetic medicine is/are correct ?

1. Genetic medicines correct/compensate for the faulty genes responsible for disease. ✓

2. Engineered viruses and lipid nanoparticles are used as carriers of the genetic medicine. ✓

3. Genetic medicines alter the entire DNA sequence. ✗

Select the answer using the code given below :

(a) 1 only

(b) 2 and 3 only

✓ (c) 1 and 2 only

(d) ~~1, 2~~

85. Consider the following statements about Mission Sudarshan Chakra of India :

1. It aims to enhance India's air defence, ballistic missile defence and aerial offensive capabilities. ✓
2. This Mission is being designed to enhance rapid, precise, and powerful defence responses, reinforcing India's strategic autonomy. ✓
3. One of the aims of this Mission is to cover all public places of India by an expanded nationwide security shield by 2035.

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 only

7:19 PM Tue 19 May

India_Defence_Affairs_2025-26 2

PAKISTAN'S RESPONSE · 7-9 MAY

Drone and missile swarms, met by the Chinese-supplied HQ-9, Y-80 and FM-90 air-defence systems, which were systematically engaged and degraded. LoC artillery shelling killed 16 Indian civilians.

PERFORMANCE OF INDIGENOUS SYSTEMS · DSGO BRIEF, 12 MAY

- ✓ Akash SAM — multiple drone and missile intercepts validated under operational fire.
- ▶ BrahMos — first combat use; airbase strikes from Su-30MKI at stand-off range.
- ▶ D-4 anti-drone **Akashteer** / **ACCES** — networked air picture rendered in real time.
- ▶ L-70, ZU-23, Schilka — neutralised low-flying drones.
- ▶ S-400 "Sudarshan Chakra" — major multi-target intercepts; 500+ km tracking.
- ▶ Pinaka MBRL — counter-fire role along the LoC.

• DOCTRINAL SHIFT · CDS GEN ANIL CHAUHAN, SHANGRI-LA DIALOGUE, 31 MAY 2025

1. A terror attack is an act of war — kinetic response from Indian soil via stand-off weapons.
2. IWT abeyance is decoupled from military cease-fire; water leverage is now a permanent strategic instrument.
3. No tolerance for nuclear blackmail — the conventional space below the nuclear threshold has been operationally validated.
4. Air power is normalised for sub-conventional response — the Balakot evolution, fully realised.

Handwritten Notes:

- S-300 → S-400 → Defence
- MTCR BOL
- 332m/s 3 Mach
- Brahmaputra
- Moscow
- Brahma
- Supersonic Cruise Missile
- ER
- AWACS ← Platform → Network
- Su
- S-400
- Brain

Layered Air Defence Concept

AIR DEFENCE LAYERS

ALTITUDE		SYSTEM	RANGE
----------	--	--------	-------

400 km	←	S-400 (Sudarshan Chakra)	
100 km	←	Barak-8 MR-SAM / LR-SAM	
70 km	←	Akash-NG / MR-SAM	
25 km	←	Akash / QRSAM	
10 km	←	Spyder / SAMAR / OSA-AK	
6 km	←	VSHORAD (IR) / Igla-S	
3 km	←	L-70 / ZU-23-2 / Shilka guns	

Networked by → Akashteer (Army) / IACCS (IAF) / TRIGUN (Navy)

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INDIA'S AIR DEFENCE

A MULTI-LAYERED, NETWORKED, INTEGRATED SHIELD



संरक्षणे अर्थात्

OUR MISSION: DETECT EARLY. DECIDE FAST. DESTROY ANY THREAT.

AGAINST THESE THREATS



FIGHTER AIRCRAFT



CRUISE MISSILES



BALLISTIC MISSILES



DRONES / SWARM DRONES



LOITERING MUNITIONS

THE FIVE-RING AIR DEFENCE SHIELD

1

STRATEGIC LONG-RANGE DEFENCE
Area Denial, Strategic Assets Protection



S-400 TRIUMF
Engages aircraft, AWACS, cruise missiles and some ballistic missiles.
Range: Up to 400 km

2

LONG-RANGE INDIGENOUS FUTURE SHIELD
Strategic Independence, Future Ready



PROJECT KUSHA
Indigenous Long-Range SAM (S-400 class). In development. Will provide sovereign control over critical technology.
Range: 150-300+ km (Planned)

3

MEDIUM-RANGE DEFENCE
Protects Bases, Cities, Vital Assets, Naval Forces



MRSAM / BARAK-8
Engages aircraft, UAVs, cruise missiles, precision weapons.
Range: Up to 70 km

4

SHORT-RANGE MOBILE DEFENCE
Area & Point Defence, Highly Mobile, Multi-Target



AKASH / AKASH-NG
Proven, reliable, ECCM, multi-target engagement, Akash-NG – new seeker, better range & mobility.
Range: 25-45 km

5

QUICK REACTION / BATTLEFIELD DEFENCE
Last-Line Protection for Troops & Assets



QRSAM • SPYDER • VSHORADS • IGLA-S • AIR DEFENCE GUNS
Engages low-flying aircraft, UAVs, helis, precision weapons at short range.
Range: 0.5 – 15 km

THE COMMAND BRAIN

IACCS

INTEGRATED AIR COMMAND AND CONTROL SYSTEM



- Fuses data from all sensors: radars, satellites, AWACS, ground systems, naval assets.
- Creates real-time Recognised Air Picture.
- Ensures fast decision, correct weapon assignment & eliminates fratricide.
- IAF SAM & CIAS units, Army AD units and Navy assets work together under IACCS.

BALLISTIC MISSILE DEFENCE (BMD)

Dedicated programme against ballistic missiles. Detect → Track → Predict → Intercept → Destroy

DRDO successfully tested Phase-II BMD system in July 2024.

DETECT

TRACK

ENGAGE

DESTROY



- Multi-layered BMD to intercept missiles outside or inside the atmosphere.

SENSORS – THE EYES AND EARS



LONG RANGE RADARS

Detect at long distances, all weather.



LOW LEVEL RADARS

Detect low-flying threats and terrain-hugging missiles.



AEW&C AIRCRAFT

Look far, see beyond horizon, track multiple targets.



SATELLITES

Early warning, surveillance, communication.



NAVAL RADARS

Maritime air picture, over-the-horizon detection.

COUNTER-DRONE DEFENCE (CUAS)



SOFT KILL
(Jamming, Spoofing, EW)



HARD KILL
(Guns, Missiles, Lasers, DEW)



NETWORK KILL
(Find Operator / Launch Node)

Integrated systems to defeat drone swarms, loitering munitions and low-RCS threats.

OUR STRENGTHS

- ✓ Multi-layered and networked architecture
- ✓ Indigenous systems in key layers
- ✓ Proven systems: Akash, MRSAM, BMD
- ✓ Strong R&D base and growing industry
- ✓ Operational experience & lessons learnt
- ✓ Moving from platform-centric to network-centric
- ✓ Integrated Tri-Service operations

KEY GAPS / CHALLENGES

- ⚠ Indigenous very-long-range SAM till Project Kusha matures
- ⚠ Drone-swarm saturation with cheap, large numbers
- ⚠ More AEW&C aircraft required
- ⚠ Protection of networks from cyber & electronic warfare
- ⚠ Need for more counter-swarm and directed-energy systems

WAY FORWARD

- Accelerate Project Kusha & indigenous technology
- Expand counter-drone & anti-swarm capabilities
- Increase AEW&C and over-the-horizon sensors
- Strengthen cyber, EW & spectrum superiority
- Full Tri-Service Integrated Air Defence Command
- Continuous training, simulation & war-gaming
- Make India a global leader in air defence

SECURING OUR SKIES. SECURING OUR NATION.



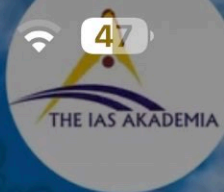
VIGILANT. INTEGRATED. INVINCIBLE.

“ The decisive factor is not who has the best missile. The decisive factor is who sees first, decides fastest, assigns the right weapon and prevents saturation. ”

2:30



47



Reels Friends



MISSION SUDARSHAN CHAKRA



theiasakademia

Mission Sudarshan Chakra : Transforming India into a secure safe-land! #missionsudarshanchakra

#UPSC2025 #UPSCMains #CivilServices
#MissionSudarshanChakra #IndianDefence
#NationalSecurity #OneNationOneElection
#SportsBill2025 #MilitaryPower #DefenceUpdates
#UPSCCurrentAffairs #IndiaRising

19 August 2025



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32



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93. Which of the following items of defence hardware is/are manufactured in India ?

1. Su-30 MKI Fighter Jets ✓
2. T-90 MK-III Tanks ✓
3. Akula Class Submarine

Select the answer using the code given below :

- ✓ (a) 1 and 2
- (b) 1 and 3
- (c) 1 only
- (d) 2 only

2025 Republic Day Parade Display

Military Vehicles & Weapon Systems

(a) Indian Army's Display

System	Type	Key Highlights
Arjun Mk-1A	Main Battle Tank	Indigenously developed advanced tank
T-90 Bhishma	Main Battle Tank	Russia-India co-developed frontline tank
K9 Vajra-T	Self-Propelled Howitzer	155mm artillery gun for desert warfare
Dhanush	Towed Artillery Gun	Indigenous upgrade of Bofors gun
Pinaka Mk-II	Multi-Barrel Rocket System	Extended range artillery support
S-400 Triumf	Air Defence System	Advanced Russian air defense system
Akash SAM System	Surface-to-Air Missile	Indigenous air defense missile

(b) Indian Navy's Display

System	Type	Key Highlights
INS Vikrant	Aircraft Carrier	First indigenous aircraft carrier

System	Type	Key Highlights
INS Arihant	Nuclear Submarine	India's SSBN for nuclear deterrence
Kalvari-Class Submarines	Attack Submarine	Scorpene-class AIP-powered submarines
BrahMos-NG	Supersonic Cruise Missile	Lighter naval variant of BrahMos
MH-60R Seahawk	Multi-Role Helicopter	Advanced anti-submarine helicopter

(c) Indian Air Force's Display

System	Type	Key Highlights
Tejas Mk-1A	Light Combat Aircraft	Indigenous fighter with AESA radar
Rafale	Multi-Role Fighter Jet	France-India frontline combat jet
Sukhoi Su-30MKI	Air Superiority Fighter	India's primary fighter aircraft
C-295 Transport	Military Transport	Airbus-TASL tactical airlifter
Apache AH-64E	Attack Helicopter	Most advanced helicopter in IAF
MQ-9B SeaGuardian	Armed Drone	India's long-endurance UAV

India's Fighter Jet Line-up (as of 2025)

Aircraft	Generation	Role	Status
MiG-21 Bison	2nd	Interceptor	Phasing Out (by 2025)
SEPECAT Jaguar	3rd	Ground Attack	Upgraded but aging

Aircraft	Generation	Role	Status
Mirage 2000	4th	Multirole	Active, Upgraded
MiG-29 UPG	4th	Multirole	Active, Upgraded
Sukhoi Su-30MKI	4++	Heavy Multirole	Backbone of IAF
Dassault Rafale	4.5	Multirole	Cutting-edge fleet
Tejas Mk1A	4++	Light Fighter	Inducting (83 ordered)
HAL Tejas Mk2	4.5	Medium Fighter	In development (1st flight expected 2025)
HAL AMCA	5th	Stealth Multirole	Prototype stage, first flight ~2028
TE DBF (for Navy)	4.5	Carrier-based Fighter	Under design stage

72. Which of the following statements with regard to drone swarms is/are correct ?

1. They use Terahertz band of frequency to communicate with the command centre. ✓
2. Individual drones in the swarm can communicate with other drones in the swarm.
3. (GPS Spoofing) is a commonly used technique to counter drone swarm attack. ✓

Select the answer using the code given below :

- (a) 1 only
- (b) 2 and 3 only
- (c) 1 and 2 only
- (d) 1, 2 and 3

📌 Tactical UAVs & Drones

- **Rustom-II (TAPAS-BH)** – Indigenous MALE UAV (Advanced trials ongoing)
- **Swarm Drone Project** – AI-enabled attack drones (DRDO & Indian startups)
- **Switch Drone** – Tactical surveillance drone (Acquired from ideaForge)

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संरक्षणे अर्थात्

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Strategic Independence, Future Ready



PROJECT KUSHA
Indigenous Long-Range SAM (S-400 class). In development. Will provide sovereign control over critical technology.
Range: 150-300+ km (Planned)

3

MEDIUM-RANGE DEFENCE
Protects Bases, Cities, Vital Assets, Naval Forces



MRSAM / BARAK-8
Engages aircraft, UAVs, cruise missiles, precision weapons.
Range: Up to 70 km

4

SHORT-RANGE MOBILE DEFENCE
Area & Point Defence, Highly Mobile, Multi-Target



AKASH / AKASH-NG
Proven, reliable, ECCM, multi-target engagement, Akash-NG – new seeker, better range & mobility.
Range: 25-45 km

5

QUICK REACTION / BATTLEFIELD DEFENCE
Last-Line Protection for Troops & Assets



QRSAM • SPYDER • VSHORADS • IGLA-S • AIR DEFENCE GUNS
Engages low-flying aircraft, UAVs, helis, precision weapons at short range.
Range: 0.5 – 15 km

THE COMMAND BRAIN

IACCS

INTEGRATED AIR COMMAND AND CONTROL SYSTEM



- Fuses data from all sensors: radars, satellites, AWACS, ground systems, naval assets.
- Creates real-time Recognised Air Picture.
- Ensures fast decision, correct weapon assignment & eliminates fratricide.
- IAF SAM & CIAS units, Army AD units and Navy assets work together under IACCS.

BALLISTIC MISSILE DEFENCE (BMD)

Dedicated programme against ballistic missiles. Detect → Track → Predict → Intercept → Destroy

DRDO successfully tested Phase-II BMD system in July 2024.

DETECT

TRACK

ENGAGE

DESTROY



- Multi-layered BMD to intercept missiles outside or inside the atmosphere.

SENSORS – THE EYES AND EARS



LONG RANGE RADARS

Detect at long distances, all weather.



LOW LEVEL RADARS

Detect low-flying threats and terrain-hugging missiles.



AEW&C AIRCRAFT

Look far, see beyond horizon, track multiple targets.



SATELLITES

Early warning, surveillance, communication.



NAVAL RADARS

Maritime air picture, over-the-horizon detection.

COUNTER-DRONE DEFENCE (CUAS)



SOFT KILL
(Jamming, Spoofing, EW)



HARD KILL
(Guns, Missiles, Lasers, DEW)



NETWORK KILL
(Find Operator / Launch Node)

Integrated systems to defeat drone swarms, loitering munitions and low-RCS threats.

OUR STRENGTHS

- ✓ Multi-layered and networked architecture
- ✓ Indigenous systems in key layers
- ✓ Proven systems: Akash, MRSAM, BMD
- ✓ Strong R&D base and growing industry
- ✓ Operational experience & lessons learnt
- ✓ Moving from platform-centric to network-centric
- ✓ Integrated Tri-Service operations

KEY GAPS / CHALLENGES

- ⚠ Indigenous very-long-range SAM till Project Kusha matures
- ⚠ Drone-swarm saturation with cheap, large numbers
- ⚠ More AEW&C aircraft required
- ⚠ Protection of networks from cyber & electronic warfare
- ⚠ Need for more counter-swarm and directed-energy systems

WAY FORWARD

- Accelerate Project Kusha & indigenous technology
- Expand counter-drone & anti-swarm capabilities
- Increase AEW&C and over-the-horizon sensors
- Strengthen cyber, EW & spectrum superiority
- Full Tri-Service Integrated Air Defence Command
- Continuous training, simulation & war-gaming
- Make India a global leader in air defence

SECURING OUR SKIES. SECURING OUR NATION.



VIGILANT. INTEGRATED. INVINCIBLE.

“ The decisive factor is not who has the best missile. The decisive factor is who sees first, decides fastest, assigns the right weapon and prevents saturation. ”



of its domestically developed Atlas drone swarm operations system.

Description



#China's AI #Swarm #Drones: Game Changer in Modern War

59

Likes

3,797

Views

30 Apr

2026

China's AI Swarm Drones: Game Changer in Modern War

China is rapidly advancing in swarm drone technology, where hundreds of small drones work together using artificial intelligence to carry out coordinated attacks. These swarm drones can confuse radar systems, overwhelm enemy defenses, and change the future of warfare.

In this video, we explain how China's swarm drone system works, its real-world applications, and why it is considered a major threat in modern military strategy.

Perfect for UPSC, defence enthusiasts, and current affairs learners.

Scanned by  Camera Scanner

68. Which of the following statements with regard to stealth technology is/are correct ?

1. ☒ Stealth objects have a very small radar cross-section and are coated with Radar Absorbing Material.
2. ☒ Stealth objects can be detected using specific frequencies.
3. ☐ Stealth objects are coated with metamaterials to increase the scattering of electromagnetic radiation.

Select the answer using the code given below :

- (a) 1 only
- (b) 2 and 3 only
- ☒ (c) 1 and 2 only
- (d) 1, 2 and 3

- IMI Galil Sniper

? Drones & UAVs:

1. Indigenous UAVs:

- Rustom-II (Tapas-BH) – MALE UAV
- Ghatak UCAV – Under development **Stealth**

2. Imported UAVs:

miniature
signature of
other weapons
heat detection

71. Consider the following statements with regard to involvement of private entities in India's space programme :

1. The Indian National Space Promotion and Authorisation Centre (IN-SPACe) is an autonomous agency formed to facilitate participation of private entities.
2. Agnikul Cosmos launched the world's first flight using 3D-printed rocket engine.
3. Skyroot Aerospace has developed liquid fuel for GSLV.

Which of the statements given above is/are correct ?

- (a) 1 only
- (b) 2 and 3 only
- (c) 1 and 2 only
- (d) 1, 2 and 3

Organization	Founded	Role & Mission	Recent Updates (2024)
Indian National Space Promotion & Authorization Center (IN-SPACe)	2020	Regulates private space activities in India	Approved first private sector rocket (Skyroot & Agnikul)
National Remote Sensing Centre (NRSC)	1974	Remote sensing & GIS applications	Monitoring climate & disaster response
Indian National Centre for Ocean Information Services (INCOIS)	1999	Ocean monitoring, weather forecasting	Studying sea level rise using satellite data

3 Major Space Treaties & Conventions

Treaty/Convention	Year	Signatories	Purpose & Key Points	Recent Updates (2024)
<u>Outer Space Treaty (OST)</u>	<u>1967</u>	114	No <u>national sovereignty</u> in space, peaceful use <i>- Space Global</i>	India supports OST principles
Rescue Agreement	1968	98	Rescue of <i>Comm</i> astronauts & return of objects	Applied to ISS emergency plans
Liability Convention	1972	101	Liability for damage caused by space objects	Addressed recent space debris concerns
Registration Convention	1976	71	Objects must be registered launched	Relates to mega constellations like Starlink

Agnikul Cosmos

After Agnibaan SORTeD-01 (single-stage suborbital, semi-cryogenic Agnilet engine, 30 May 2024) from its private launchpad "Dhanush" at Sriharikota, Agnikul has continued ground qualification of the orbital Agnibaan vehicle (configurable 1–7 stage architecture).

Skyroot, Dhruva, Bellatrix, GalaxEye, Astrogate

Skyroot is preparing Vikram-1 for its maiden orbital flight (3-stage solid + LOX-kerosene upper stage), targeted in 2026. Dhruva launched LEAP-3 and P-30 nanosatellite buses on PSLV missions; signed IN-SPACe hosted-payload contracts. Bellatrix progressed its high-performance green-propellant thrusters. GalaxEye is preparing the Drishti multi-sensor (SAR + optical fusion) satellite. Astrogate Labs is building free-space optical communications terminals.

POLICY PULSE

FDI Reform (February 2024) — 100% under automatic route for components/sub-systems; 74% automatic route for satellite manufacturing & operation; 49% automatic route for launch vehicles. Beyond these thresholds, government approval required.

IN-SPACe crossed 100 technology-transfer agreements (HAL-SSLV being the centenary)

Scanned by  Camera Scanner

69. Which of the following statements with regard to Black Boxes used in modern aircrafts is/are correct ?

1. They carry a beacon emitting red light pulses to facilitate underwater detection. ✓
2. They record both the cockpit voice and flight data. ✓
3. Their memory units are made using either stainless steel or titanium.

Select the answer using the code given below :

- (a) 1 only
- (b) 2 and 3 only
- (c) 1 and 2 only



Description



Black Box to find the real reason behind Ahmedabad Plane Crash!? #Blackbox #ahmedabad

16

Likes

2,245

Views

17 Jun

2025

#planecrash #plane #boeing #crash #aviation #airplane
#planecrashes #flight #aircraft #travel #planewreck
#history #accident #pilot #airport #news #aircrash
#ahmedabadnews #airindia #airindiacrash