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for

IAS EXAMINATION



From

30th Mar to 04th April 2026

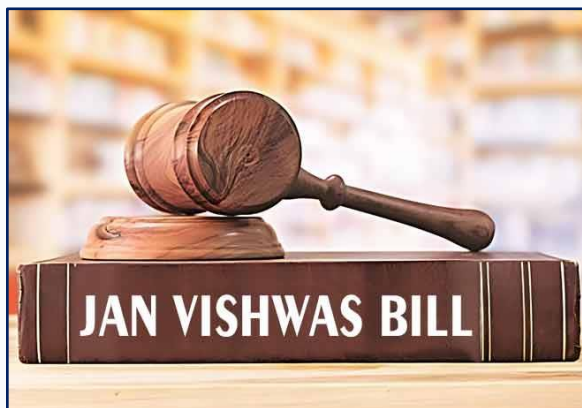
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1.1. JAN VISHWAS (AMENDMENT OF PROVISIONS) BILL, 2026

Context

- **Recently**, the Lok Sabha passed the **Jan Vishwas (Amendment of Provisions) Bill, 2026**, a successor to the 2023 Act, aiming to decriminalize over **700 provisions** across **79 Central Acts**. By replacing minor criminal punishments with civil penalties, the Bill seeks to reduce judicial burden and foster trust-based governance.
- Union Minister Piyush Goyal noted that the reform shifts from colonial-era "punishment-centric" laws to a "justice-oriented" framework, specifically benefiting MSMEs and entrepreneurs by enhancing the ease of doing business.



1. Scope and Objective

- **Total Amendments:** The Bill proposes to amend **784 provisions** spanning across **79 Central Acts** administered by **23 different Ministries**.
- **Primary Goal:** It aims to bolster the "**Ease of Doing Business**" and "**Ease of Living**" by decriminalizing minor, technical, and procedural defaults that do not involve any threat to national security or public interest.
- **Decriminalization Stats:** Out of the proposed changes, **717 provisions** are specifically being decriminalized, while **67 provisions** are being amended to simplify daily living for citizens.

2. Key Features of the Reform

- **Replacement of Imprisonment:** For several minor offences under laws like the **Motor Vehicles Act (1988)** and the **Electricity Act (2003)**, the Bill replaces jail terms with monetary penalties.
- **Adjudication Mechanism:** To reduce the load on the judiciary, the Government will appoint **Adjudicating Officers** to determine penalties through administrative inquiries rather than court trials.
- **Appellate Authority:** A structured grievance redressal system is introduced where individuals can appeal to the decisions of Adjudicating Officers to a higher administrative authority.
- **Graduated Penalties:** The Bill introduces the concept of **warnings** or **improvement notices** for first-time offenders in specific categories, moving to monetary fines only for repeat violations.
- **Periodic Revision:** To ensure the penalties remain effective in deterrents, the Bill mandates a **10% increase** in the minimum amount of fines and penalties every **three years**.

3. Major Acts Targeted

The Bill covers a wide array of sectors, including but not limited to:

- **Environment & Forests:** Indian Forest Act (1927), Environment (Protection) Act (1986).
- **Media & Tech:** Information Technology Act (2000), Press and Registration of Books Act.

- **Trade & Industry:** Patents Act (1970), Copyright Act (1957), Trade Marks Act (1999).
- **Consumer Protection:** Legal Metrology Act (2009), Food Safety and Standards Act (2006).

Q. With reference to the Jan Vishwas (Amendment of Provisions) Bill, 2026, consider the following statements:

1. The Bill mandates a 10% annual increase in the minimum amount of fines and penalties across all amended Acts.
2. It introduces a mechanism where Adjudicating Officers, instead of traditional courts, will determine penalties for certain minor offences.
3. The Bill proposes to decriminalize provisions in over 70 Central Acts to promote trust-based governance.

Which of the statements given above is/are correct?

- A) 1 and 2 only
- B) 2 and 3 only
- C) 1 and 3 only
- D) 1, 2, and 3

Solution:

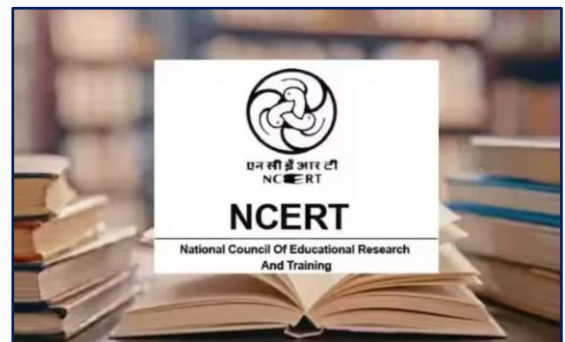
Correct Answer: B

- **STATEMENT 1 IS INCORRECT:** While the Bill does provide a 10% increase in fines and penalties, this revision is scheduled to occur every **three years**, not annually.
- **STATEMENT 2 IS CORRECT:** One of the core features of the Bill is the appointment of **Adjudicating Officers** to handle minor defaults administratively, thereby reducing the burden on the Indian court system.
- **STATEMENT 3 IS CORRECT:** The 2026 version of the Bill is an expansive reform that targets **79 Central Acts** (more than 70) to streamline the regulatory environment and decriminalize hundreds of provisions.

1.2. NCERT GRANTED "DEEMED-TO-BE-UNIVERSITY" STATUS

Context

The Ministry of Education has issued a formal notification declaring the **National Council for Educational Research and Training (NCERT)** as an institution **deemed to be a university**. This status follows recommendations from an expert panel approved by the **University Grants Commission (UGC)** in January.



Key Provisions and Implications

- **Expanded Role:** The new status transitions NCERT from a nodal school curriculum body into a **higher education and research institution**.

- **Degree-Granting Authority:** NCERT and its **six regional institutes** are now empowered to offer academic courses, design their own programmes, and **grant degrees** (undergraduate, postgraduate, and doctoral).
- **Research Focus:** The mandate specifically directs the body to begin **doctoral programmes** and expand into "innovative academic areas".
- **Global Reach:** The notification allows for the establishment of **off-campus or offshore campuses**, provided they comply with UGC norms and guidelines.

Mandatory Compliance and Conditions

- **UGC Norms:** All academic courses must conform to the standards prescribed by the **UGC** and other relevant statutory bodies.
- **Non-Commercial Nature:** NCERT is strictly prohibited from engaging in any activities that are "**commercial**" or "**profit-making**" in nature.
- **Accreditation:** The institution must secure accreditation from the **National Assessment and Accreditation Council (NAAC)** and obtain programme ratings from the **National Board of Accreditation**.
- **NEP 2020 Alignment:** All future expansions and academic endeavours must align with the **National Education Policy (NEP) 2020**.

About NCERT:

NCERT (1961) is an autonomous body under the Government of India that advises Centre and States on improving school education quality.

Key Functions:

- Conducts and promotes research in school education
- Develops textbooks, learning materials, and digital content
- Organises teacher training (pre-service & in-service)
- Promotes innovative teaching methods and practices
- Collaborates with states, universities, NGOs, and international organisations
- Acts as a nodal agency for Universalisation of Elementary Education
- Supports bilateral and international educational exchange programmes

Q. With reference to the recent notification regarding NCERT, consider the following statements:

1. NCERT has been granted the status of a "deemed-to-be-university".
2. It can now award undergraduate, postgraduate, and doctoral degrees.
3. It is now completely independent of UGC regulations.

Which of the statements given above is/are correct?

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

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

Answer: A

Explanation:

- **Statement 1 is Correct:** The Ministry of Education has officially notified the National Council for Educational Research and Training (NCERT) as an institution **deemed to be a university**. This status was granted based on the recommendations of an expert panel from the **University Grants Commission (UGC)**.
- **Statement 2 is Correct:** This new status transforms NCERT from a curriculum body into a higher education and research institution. It is now authorized to offer academic programs and **grant degrees** at the undergraduate, postgraduate, and doctoral levels.
- **Statement 3 is Incorrect:** NCERT is **not independent** of UGC regulations. The notification explicitly states that all academic courses and programs must conform to the **norms and standards prescribed by the UGC** and other relevant statutory bodies. Additionally, it must comply with UGC guidelines regarding the establishment of new or offshore campuses.

1.3. THE CENTRAL ARMED POLICE FORCES (GENERAL ADMINISTRATION) BILL, 2026

Context:

Recently, the **Central Armed Police Force (General Administration) Bill, 2026** was passed in the **Lok Sabha** via a **voice vote**. The Bill seeks to restructure the administrative and promotional hierarchy within the CAPFs.



Key Features of the CAPF Bill

1. Reservation of Senior Posts for IPS Officers

The most critical and controversial provision of the Bill involves the "deputation" of Indian Police Service (IPS) officers into senior CAPF ranks:

- **Inspector-General (IG):** 50% of total posts to be filled by IPS officers.
- **Additional Director-General (ADG):** At least 67% of posts to be filled by IPS officers.
- **Special DG & Director-General (DG):** 100% of these top-tier ranks are reserved for IPS officers on deputation.

2. Scope of Application: The Act covers the five major CAPFs—CRPF, BSF, CISF, ITBP, and SSB—and authorizes the Central Government to include additional forces through notification.

3. Rule-Making Power: It grants the Central Government authority to formulate rules regarding recruitment, deputation, and service conditions, with such rules having overriding effect over existing laws and judicial decisions.

4. Nodal Administrative Authority: The Bill grants the Ministry of Home Affairs (MHA) expanded powers to move officers between different CAPFs for administrative exigencies, though the distinct identity of each force (e.g., the border-guarding role of the BSF vs. the internal security role of the CRPF) is to be maintained.

Important Supreme Court Judgements

In May 2025, the Supreme Court issued a specific directive to address career stagnation:

- **Phasing Out Deputation:** The Court ordered the government to “**progressively reduce**” IPS deputation in CAPFs up to the rank of IG over a period of two years.
- **Cadre Review:** It mandated a comprehensive cadre review within six months to ensure more promotion avenues for homegrown cadre officers.

About CAPF

- The Central Armed Police Forces (CAPF) are seven security units under India's Ministry of Home Affairs (MHA), responsible for internal security, border patrol, and counter-insurgency, with over 10 lakh personnel. Key forces include CRPF, BSF, CISF, ITBP, SSB, NSG, and Assam Rifles.

Force	Full Form	Primary Border / Role
BSF	Border Security Force	Pakistan and Bangladesh borders.
ITBP	Indo-Tibetan Border Police	China (Line of Actual Control - LAC).
SSB	Sashastra Seema Bal	Nepal and Bhutan borders.
Assam Rifles	—	Myanmar border (Sentinels of the North-East).
CRPF	Central Reserve Police Force	Internal Security (Naxalism, Riot control, Elections).
CISF	Central Industrial Security Force	Industrial Security (Airports, Metro, Space & Nuclear installs).
NSG	National Security Guard	Counter-terrorism and Anti-hijacking (The "Black Cats").

Q. Which of the following statements is/are correct regarding CAPFs in India?

1. CAPFs operate under the Ministry of Defence.
2. CAPFs include both border guarding and internal security forces.
3. Assam Rifles guards the Indo-Myanmar border.

Select the correct answer:

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

(d) 1, 2 and 3

Answer: A

Explanation:

Statement 1 is Incorrect: All Central Armed Police Forces (CAPFs) actually fall under the **Ministry of Home Affairs (MHA)**, not the Ministry of Defence. The Ministry of Defence only manages the Army, Navy, and Air Force.

Statement 2 is Correct: These forces have a double role. Some, like the BSF, guard our **borders**, while others, like the CRPF, handle **internal security** issues like riots or elections.

Statement 3 is Correct: The **Assam Rifles** is specifically tasked with guarding the border between India and **Myanmar**.

1.4. GOVERNOR'S POWER UNDER ARTICLE 161

Context

- **Recently**, a Full Bench of the **Madras High Court** ruled that the Governor of a State is strictly bound by the "aid and advice" of the State Council of Ministers while exercising powers under **Article 161** of the Constitution.
- The Court clarified that the Governor, regardless of personal opinion, cannot exercise independent discretion or take a different view from the Cabinet regarding the remission and premature release of convicts.



1. Scope of Article 161

Article 161 of the Indian Constitution empowers the **Governor of a State** to grant:

- **Pardon:** Completely absolves the convict from the sentence and the conviction.
- **Reprieve:** A temporary stay on the execution of a sentence.
- **Respite:** Awarding a lesser sentence in place of one originally awarded due to special facts (e.g., pregnancy or physical disability).
- **Remission:** Reducing the period of the sentence without changing its character (e.g., reducing two years of rigorous imprisonment to one year).
- **Commutation:** Substituting one form of punishment for a lighter form (e.g., rigorous imprisonment to simple imprisonment).

2. Limitations on Article 161

- **Jurisdiction:** The power extends only to matters to which the **executive power of the State** extends (offences against State laws).
- **Death Penalty:** Unlike the President, the Governor **cannot pardon** a death sentence. However, the Governor **can** suspend, remit, or commute a death sentence.

- **Court Martial:** The Governor has no power to grant clemency in cases of punishment by a Military Court (Court Martial).

Recent Madras High Court Judgement (April 2026)

The Full Bench of the Madras High Court addressed whether the Governor has any "discretionary" power to reject a Cabinet recommendation for premature release.

Key Highlights of the Ruling:

- **Binding Nature of Advice:** The court held that the Governor is constitutionally obligated to follow the State Cabinet's recommendation. The phrase "aid and advice" under Article 163 is mandatory for the exercise of powers under Article 161.
- **No Independent Discretion:** The Bench ruled that under no circumstances can the Governor take a view different from the Council of Ministers in matters of remission.
- **Reliance on Precedents:** The High Court relied heavily on the Supreme Court's landmark judgements in **Maru Ram v. Union of India (1980)** and **AG Perarivalan v. State of Tamil Nadu (2022)**, which established that the executive power of the Governor is actually the power exercised by the State Government.

Comparative Analysis: President vs. Governor

Feature	President (Article 72)	Governor (Article 161)
Law under which offence is committed	Offences against Union Laws.	Offences against State Laws.
Death Sentence	Can grant Pardon , commute, or remit.	Cannot Pardon; can only commute, remit, or suspend.
Court Martial	Can grant clemency for Military Courts.	No power regarding Court Martial.
Binding Advice	Bound by Union Cabinet advice.	Bound by State Cabinet advice.

Q. Consider the following statements regarding the Pardoning Power of the Governor in India:

Statement-I: The Governor of a State has the power to pardon a death sentence if the offence is against a law to which the executive power of the State extends.

Statement-II: The Madras High Court recently ruled that the Governor is bound by the aid and advice of the Council of Ministers while exercising powers under Article 161.

Which one of the following is correct in respect of the above statements?

- A) Both Statement-I and Statement-II are correct and Statement-II is the correct explanation for Statement-I.
- B) Both Statement-I and Statement-II are correct and Statement-II is not the correct explanation for Statement-I.

- C) Statement-I is correct but Statement-II is incorrect.
D) Statement-I is incorrect but Statement-II is correct.

Answer: D

Solution:

- **STATEMENT-I IS INCORRECT:** According to the Constitution and clarified by various Supreme Court judgements, the Governor **cannot** pardon a death sentence. Only the President of India has the power to pardon a death sentence under Article 72. The Governor can only suspend, remit, or commute a death sentence.
- **STATEMENT-II IS CORRECT:** The Madras High Court Full Bench in April 2026 reaffirmed that the Governor must act strictly according to the Cabinet's advice under Article 161 and has no independent discretionary power in these matters.

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2.1. SMALL SAVINGS SCHEMES

Context:

Recently, the Government of India announced that interest rates for various **Small Savings Schemes (SSS)** will remain unchanged for the first quarter of the 2026-27 financial year (April-June 2026). This marks the eighth consecutive quarter where the Ministry of Finance has maintained a status quo on rates for popular instruments like the Public Provident Fund (PPF) and National Savings Certificate (NSC), despite fluctuations in benchmark government bond yields.



1. Overview of Small Savings Schemes

Small Savings Schemes are a set of investment vehicles managed by the Central Government to encourage household savings and provide secure investment options to citizens.

- **Administration:** These are managed by the **Department of Economic Affairs (DEA)** under the Ministry of Finance.
- **Operating Agencies:** They are primarily operated through **Post Offices** across the country, though designated public and private sector banks also offer these services.
- **Target Audience:** These schemes are designed to provide "risk-free" returns to small investors, especially in rural and semi-urban areas where formal banking penetration may be lower.

2. The National Small Savings Fund (NSSF)

The NSSF is a critical component of the government's fiscal management.

- **Establishment:** It was set up in **1999** within the **Public Account of India** under Article 266(2) of the Constitution.
- **Mechanism:** All deposits received under small savings schemes are credited to this fund. Conversely, all withdrawals by depositors are made from it.
- **Usage by Government:** The net collections (deposits minus withdrawals) are invested in Special Central Government Securities and Special State Government Securities. This effectively helps the Union Government fund its **Fiscal Deficit**.

3. Classification of Schemes

The schemes are generally categorized into three main buckets:

Category	Key Schemes
Post Office Deposits	Post Office Savings Account, Recurring Deposits, Time Deposits (1, 2, 3, and 5 years).
Savings Certificates	National Savings Certificate (NSC), Kisan Vikas Patra (KVP).

Social Security Schemes	Public Provident Fund (PPF), Sukanya Samriddhi Yojana (SSY), Senior Citizens Savings Scheme (SCSS).
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4. Interest Rate Determination

Interest rates on these schemes are not market-linked in real-time but are revised **quarterly** by the Ministry of Finance.

- **The Formula:** Based on the recommendations of the **Shyamala Gopinath Committee (2010)**, the interest rates are supposed to be 25-100 basis points higher than the yields of government bonds (G-Secs) of comparable maturity.
- **Current Status (as of March 31, 2026):**
 - **PPF:** 7.1%
 - **Sukanya Samriddhi:** 8.2%
 - **Senior Citizen Savings Scheme:** 8.2%
 - **Savings Deposit:** 4.0%

5. Mahila Samman Savings Certificate (MSSC)

Launched in the 2023-24 Budget, this is a one-time small savings scheme for women.

- **Tenure:** 2 years
- **Deposit Limit:** Maximum of **₹2 Lakh**.
- **Interest:** Fixed at 7.5% per annum, compounded quarterly.
- **Withdrawal:** Partial withdrawal (up to 40%) is allowed after one year.

Q. With reference to the Small Savings Schemes (SSS) in India, consider the following statements:

1. The interest rates on these schemes are revised annually by the Reserve Bank of India.
2. The National Small Savings Fund (NSSF) is part of the Public Account of India.
3. All Small Savings Schemes are mandatory for all citizens under the Financial Inclusion Act.
4. The interest rates are generally kept higher than the prevailing Government Security (G-Sec) yields of comparable maturity.

How many of the statements given above are correct?

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

Correct Answer: (b) Only two

Solution:

- Statement 1 is incorrect: Interest rates are revised quarterly (not annually) by the Ministry of Finance (not the RBI).

- Statement 2 is correct: The NSSF was established in 1999 within the Public Account of India under Article 266(2).
- Statement 3 is incorrect: These schemes are voluntary investment options; there is no "Financial Inclusion Act" making them mandatory for all citizens.
- Statement 4 is correct: Based on the Shyamala Gopinath Committee recommendations, these rates typically carry a spread (premium) over G-Sec yields to remain attractive to small investors.

2.2. RUPEE DEPRECIATION

Context

Recently, the Indian Rupee hit a historic low, crossing the **₹94.80 per US Dollar** mark on March 31. This slump is primarily attributed to a widening trade deficit and escalating energy prices triggered by geopolitical tensions in West Asia. The currency has witnessed a significant decline this fiscal year, prompting the Reserve Bank of India (RBI) to intervene in the foreign exchange market to curb excessive volatility.



1. Defining Rupee Depreciation

Rupee depreciation refers to the fall in the value of the Indian Rupee in terms of a foreign currency (usually the US Dollar) in a **Floating Exchange Rate System**.

- **Market-Driven:** It occurs due to the market forces of demand and supply. If the demand for Dollars exceeds the supply of Dollars in the Indian market, the Rupee weakens.
- **Depreciation vs. Devaluation:**
 - **Depreciation:** Happens in a market-determined system.
 - **Devaluation:** A deliberate downward adjustment of the official exchange rate by the Government or Central Bank in a **Fixed Exchange Rate System**.

2. Major Causes of Depreciation

The current trend is driven by a combination of domestic and global factors:

- **Surging Crude Oil Prices:** India imports over 80% of its crude oil. Higher oil prices increase the demand for Dollars to pay for these imports, weakening the Rupee.
- **US Federal Reserve Policy:** When the US Fed raises interest rates, investors pull capital out of emerging markets like India (Foreign Portfolio Investment outflows) to seek higher, safer returns in the US.
- **Trade Deficit:** A persistent gap where imports exceed exports leads to a higher outflow of foreign currency.
- **Safe-Haven Demand:** During global geopolitical crises, investors flock to the "safe" US Dollar, causing it to strengthen against all other currencies (DXY Index rise).

3. Impact on the Indian Economy

The effects of a weaker Rupee are a double-edged sword:

Impact Area	Effect of Depreciation
Imports	Become more expensive. This leads to " Imported Inflation " as prices of oil, electronics, and fertilizers rise.
Exports	Become more competitive (cheaper) in the international market, potentially benefiting IT, Textiles, and Pharma sectors.
External Debt	Indian companies with External Commercial Borrowings (ECBs) find it harder to repay as they must shell out more Rupees for every Dollar owed.
Remittances	Non-Resident Indians (NRIs) sending money home see their foreign earnings converted into more Rupees, benefiting recipient families.
Current Account	Initially, the Current Account Deficit (CAD) may widen due to higher import bills.

5. RBI's Role in Management

- India follows a "**Managed Float**" system. The RBI does not target a specific level for the Rupee but intervenes to prevent "wild swings."
- **Forex Intervention:** RBI sells Dollars from its reserves and buys Rupees to suck out excess supply.
- **Monetary Policy:** Raising interest rates can make Indian bonds more attractive to foreign investors, encouraging capital inflows.
- **Easing Inflows:** Relaxing norms for **ECBs** and **NRI deposits** to bring more Dollars into the economy.

Q. With reference to the Indian economy, consider the following statements regarding the depreciation of the Rupee:

1. A persistent depreciation of the Rupee generally leads to a decrease in the burden of External Commercial Borrowings for Indian corporates.
2. If the Real Effective Exchange Rate (REER) of the Rupee is increasing, it indicates that India's exports are becoming more price-competitive.
3. The Reserve Bank of India typically intervenes in the forex market by buying Dollars when the Rupee is depreciating rapidly.
4. Depreciation of the currency can lead to 'Imported Inflation' particularly in a country that is a net importer of essential commodities.

How many of the statements given above are correct?

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

Correct Answer: (a) Only one

Solution:

- **STATEMENT 1 IS INCORRECT:** Depreciation **increases** the burden of ECBs because companies have to pay more Rupees to service the same amount of Dollar debt.
- **STATEMENT 2 IS INCORRECT:** An increasing REER implies that the currency is becoming **overvalued** relative to trading partners, making exports **less** competitive.
- **STATEMENT 3 IS INCORRECT:** To support a depreciating Rupee, the RBI **sells** Dollars (to increase Dollar supply) and buys Rupees. Buying Dollars would further weaken the Rupee.
- **STATEMENT 4 IS CORRECT:** This is the standard definition of imported inflation; as the Rupee weakens, the cost of importing essentials like crude oil rises, pushing up domestic price levels.

2.3. IRDAI

Context

Recently, IRDAI has mandated insurance companies to fast-track the transition to **Indian Accounting Standards (Ind AS)**. This systemic shift, specifically aligned with the global **IFRS 17** framework, aims to replace traditional "premium-based" accounting with a "fair value" model. The move is designed to ensure global comparability of Indian insurers' financial health and enhance transparency for foreign investors ahead of the 2026-27 fiscal year.



1. Statutory Framework and Origin

The Insurance Regulatory and Development Authority of India (IRDAI) is the apex body supervising the insurance sector in India.

- **Establishment:** It was constituted following the recommendations of the **Malhotra Committee Report (1994)**.
- **Legal Status:** It is an **autonomous and statutory body** formed under the **IRDAI Act, 1999**.
- **Headquarters:** Initially located in New Delhi, the headquarters shifted to **Hyderabad** in 2001.
- **Nodal Ministry:** It operates under the administrative purview of the **Ministry of Finance**.

2. Composition of the Authority

As per Section 4 of the IRDAI Act, 1999, the body consists of a ten-member team appointed by the Government of India:

- One **Chairperson**.
- Five **Whole-time Members**.
- Four **Part-time Members**.

3. Key Powers and Functions

The IRDAI acts as a guardian for policyholders while ensuring the orderly growth of the industry.

- **Licensing:** It issues, renews, modifies, withdraws, suspends, or cancels registrations for insurance and reinsurance companies.

- **Protection of Interests:** It specifies the code of conduct for surveyors, loss assessors, and intermediaries to protect policyholder interests.
- **Financial Oversight:** It regulates the investment of funds by insurance companies and maintains a percentage of the **solvency margin** (the capital an insurer holds relative to the risks it takes).
- **Adjudication:** It adjudicates disputes between insurers and intermediaries or insurance intermediaries.

4. Transformational Initiatives (The "Trinity" of Insurance)

To achieve the goal of "Insurance for All by 2047," IRDAI has introduced three pillars:

- **Bima Sugam:** An online platform serving as a protocol for all insurance needs—buying policies, servicing, and claim settlement—modeled after the UPI or ONDC.
- **Bima Vahak:** A women-centric field force aimed at increasing insurance penetration in every Gram Panchayat.
- **Bima Vistaar:** An affordable, bundled insurance product covering life, health, property, and accidents specifically designed for the rural population.

5. Recent Regulatory Updates (2025-2026)

- **Removal of Age Bar:** IRDAI recently abolished the age limit (previously 65 years) for purchasing health insurance, making coverage accessible to senior citizens regardless of age.
- **Ind AS Implementation:** The regulator has proposed the implementation of **Indian Accounting Standards (Ind AS)** for all insurers effective from April 1, 2026, to align with global financial reporting standards.
- **Pre-existing Disease (PED) Waiting Period:** The waiting period for covering pre-existing diseases in health insurance has been reduced from 48 months to **36 months**.

Q. With reference to the Insurance Regulatory and Development Authority of India (IRDAI), consider the following statements:

Statement-I: The IRDAI is a constitutional body established to regulate and promote the insurance and re-insurance industries in India.

Statement-II: The IRDAI has recently mandated that health insurance providers cannot deny coverage to individuals based on their age.

Which one of the following is correct in respect of the above statements?

- (a) Both Statement-I and Statement-II are correct and Statement-II is the correct explanation for Statement-I.
- (b) Both Statement-I and Statement-II are correct and Statement-II is not the correct explanation for Statement-I.
- (c) Statement-I is incorrect but Statement-II is correct.
- (d) Statement-I correct and Statement-II are incorrect.

Correct Answer: (c)

Solution:

- **STATEMENT I IS INCORRECT:** IRDAI is a **statutory body** (created by an Act of Parliament, the IRDAI Act 1999), not a constitutional body. Constitutional bodies are those mentioned in the Constitution of India (e.g., Election Commission, UPSC).
- **STATEMENT II IS CORRECT:** In a landmark move to enhance inclusivity, IRDAI recently removed the 65-year age ceiling for buying health insurance policies, ensuring that senior citizens can enter the insurance net at any age.

2.4. KASHMIR CARPET INDUSTRY

Context

The ongoing war in **West Asia** between Iran and the U.S.-Israel bloc has severely impacted the export of famed **Kashmir carpets**. Key global exhibitions in **Denmark, China, and the UAE** have been cancelled or postponed, threatening the livelihoods of over **80,000 locals** associated with the manufacturing sector in the Union Territory.



1. Industry Overview and Economic Impact

- **Employment:** Approximately **80,000 local artisans** in Kashmir are directly involved in the carpet manufacturing sector.
- **Export Trends:**
 - The sector has seen a steady decline, with exports falling to **₹260.70 crore in 2024-25** from ₹357 crore in 2022-23.
 - Historical growth showed a significant jump from ₹84.55 crore in 1990-91 to **₹821.50 crore in 2016-17**.
- **Cancelled Global Events (2026):**
 - Copenhagen Lifestyle Expo (Denmark).
 - Qinghai International Carpet Exhibition (China).
 - Sharjah Exhibition (UAE).

2. Institutional Framework

- **Carpet Export Promotion Council (CEPC):**
 - Function: Acts as the nodal agency informing and supporting carpet sellers regarding global market opportunities and exhibitions.
 - Affiliation: Operates under the **Ministry of Textiles**, Government of India.

3. Historical Context:

- Legacy of Zain-ul-Abidin: The carpet craft traces its roots back to the 15th century when Badshah Zain-ul-Abidin invited artisans from Persia and Central Asia to settle in Kashmir.
- From Shawls to Carpets: Initially, the focus was on weaving exquisite pashmina shawls. However, with the decline of demand due to jacquard looms in Europe, artisans shifted their skills to carpet weaving.

- British Recognition: Kashmiri carpets gained global acclaim after being exhibited at the Great London Exhibition of 1851.
- Weaving Secrets: The secret blueprints, known as talim, guide artisans across generations, preserving the ancient techniques.

Pashmina and Shahtoosh

- Pashmina and Shahtoosh differ primarily in legality and sourcing: Pashmina is a legal, sustainable wool from domesticated Ladakh goats, while Shahtoosh is an illegal, unethical fiber from endangered Tibetan antelope (Chiru).
- Shahtoosh offers unparalleled lightness and warmth (often called 'ring shawls'), but its production causes severe animal cruelty and is banned.

Q. Assertion (A): The Kashmir carpet industry has experienced a decline in exports in recent years.
Reason (R): Ongoing geopolitical tensions in West Asia have disrupted international exhibitions and trade opportunities.

- (a) Both A and R are correct and R is the correct explanation
(b) Both A and R are correct but R is not the correct explanation
(c) A is correct but R is incorrect
(d) A is incorrect but R is correct

Answer: A

Explanation:

Assertion (A) is correct: Official figures indicate that the **Kashmir carpet industry** has indeed witnessed a consistent slide in exports. In the **2024-25** period, exports fell to **₹260.70 crore**, a significant drop from the **₹357 crore** recorded in **2022-23**. This reflects a clear downward trend in recent years compared to the peak of ₹821.50 crore seen in 2016-17.

Reason (R) is correct: The ongoing war and **geopolitical tensions in West Asia** (specifically between the U.S.-Israel bloc and Iran) have cast a shadow over these exports. As a direct consequence, major **international exhibitions** and trade platforms—such as those in **Denmark (Copenhagen Lifestyle Expo)**, **China (Qinghai International Carpet Exhibition)**, and the **UAE (Sharjah exhibition)**—have been cancelled or postponed.

R is the correct explanation of A: The cancellation of these global exhibitions and the prevailing situation in the Gulf countries have left Kashmiri carpet dealers with **bleak export prospects**. Since the industry relies heavily on international exposure and global buyers to sustain its high-value exports, the disruption of these trade opportunities is a primary driver behind the current **decline in export figures**.

2.5. NATIONAL JUTE BOARD AND JUTE CORPORATION OF INDIA

Context

Recently, the Cabinet Committee on Economic Affairs (CCEA) approved a significant increase in the **Minimum Support Price (MSP) for raw jute** for the 2026-27 marketing season. The **Jute Corporation of India (JCI)** continues to serve as the nodal agency for price support operations, while the **National Jute Board (NJB)** focuses on market promotion and technological interventions to modernize the sector.



1. About Jute: The "Golden Fiber"

Jute is a natural fiber with a golden and silky shine, making it the second most important vegetable fiber after cotton in terms of usage and production.

- **Geographical Conditions:**

- **Climate:** It requires a hot and humid climate with temperatures ranging between **24°C and 35°C**.
- **Rainfall:** Heavy rainfall of **120 cm to 150 cm** is essential, with high relative humidity (80-90%).
- **Soil:** It thrives best in **alluvial soil** (silt-laden) found in the floodplains of the Ganges-Brahmaputra delta.
- **Production Hubs:** India is the world's largest producer. **West Bengal** is the leading state, followed by **Bihar, Assam, and Odisha**.

- **Environmental Benefits:**

- Jute is **100% biodegradable** and recyclable.
- A hectare of jute plants consumes about 15 tonnes of CO₂ and releases 11 tonnes of Oxygen during a single season.

- **The Retting Process:** This is a crucial post-harvest step where jute stems are submerged in water to separate the fiber from the woody core. The government is promoting **In-situ Tank Retting** to save water and improve fiber quality.

2. National Jute Board (NJB)

The National Jute Board is the apex body responsible for the overall development and promotion of the jute industry in India.

- **Establishment:** It is a **statutory body** established under the **National Jute Board Act, 2008**.
- **Ministry:** It functions under the administrative control of the **Ministry of Textiles**, Government of India.
- **Merger:** It was formed by merging the erstwhile Jute Manufacturers Development Council (JMDC) and the National Centre for Jute Diversification (NCJD).
- **Headquarters:** Kolkata, West Bengal.
- **Key Functions:**
 - **Market Promotion:** Organizing domestic and international fairs to promote Indian jute products.
 - **Research & Development:** Funding R&D projects for product diversification, such as jute geotextiles and agro-textiles.

- **Incentive Schemes:** Implementing schemes like the Jute Integrated Development Scheme (JIDS) to support MSMEs and artisans.
- **Standardization:** Working towards improving the quality of jute fiber through better retting technologies (e.g., JUTE-ICARE).

3. Jute Corporation of India (JCI)

While the NJB handles promotion, the JCI is primarily concerned with the commercial and price-stabilization aspects of raw jute.

- **Establishment:** It was set up in **1971** as a Government of India enterprise.
- **Status:** It is a **Central Public Sector Undertaking (CPSU)** under the **Ministry of Textiles**.
- **Primary Objective:** To protect the interests of jute growers through **Price Support Operations**.
- **Key Functions:**
 - **MSP Procurement:** Acting as the nodal agency to purchase raw jute from farmers at the MSP whenever market prices fall below the threshold.
 - **Commercial Purchase:** Engaging in the commercial purchase of jute to ensure a steady supply to the industry.
 - **Stabilizing Prices:** Managing buffer stocks to prevent extreme price volatility in the market.
 - **Direct Interaction:** Operating through a network of Departmental Purchase Centres (DPCs) to eliminate middlemen.

4. Regulatory and Economic Framework

- **Jute Packaging Materials (Compulsory Use in Packaging Commodities) Act, 1987:** This act mandates the compulsory use of jute packaging for certain commodities. Currently, the government mandates **100% of food grains** and **20% of sugar** to be packed in diversified jute bags.
- **MSP Determination:** The MSP for raw jute is fixed by the government based on the recommendations of the **Commission for Agricultural Costs and Prices (CACP)**.

Q. Consider the following statements regarding the Jute sector in India:

Statement-I: The National Jute Board is a statutory body established to handle the procurement of raw jute from farmers at Minimum Support Price (MSP).

Statement-II: The Jute Packaging Materials Act of 1987 mandates the compulsory use of jute for 100% of food grain packaging in India.

Which one of the following is correct in respect of the above statements?

- A) Both Statement-I and Statement-II are correct and Statement-II is the correct explanation for Statement-I.
- B) Both Statement-I and Statement-II are correct and Statement-II is not the correct explanation for Statement-I.
- C) Statement-I is correct but Statement-II is incorrect.
- D) Statement-I is incorrect but Statement-II is correct.

Solution: D

- **Statement-I is INCORRECT:** The **National Jute Board (NJB)** is indeed a statutory body, but its role is the **promotion and development** of the industry. The procurement of raw jute at MSP is the mandate of the **Jute Corporation of India (JCI)**.
- **Statement-II is CORRECT:** Under the Jute Packaging Materials (Compulsory Use in Packaging Commodities) Act, 1987, the government currently mandates **100% of food grains** and **20% of sugar** to be packed in jute bags to support the industry and farmers.

2.6. THE LPG TO PNG SHIFT

Context

India is currently pushing for a massive expansion of **Piped Natural Gas (PNG)** to replace **Liquefied Petroleum Gas (LPG)** for domestic cooking. Recent government data indicates that while India has 32 crore LPG connections, domestic natural gas production is now sufficient to cater to 30 crore connections if converted to PNG. This shift is part of India's broader goal to increase the share of natural gas in its energy mix from the current **~6.7% to 15% by 2030**.



1. Comparative Analysis: LPG, LNG, CNG, and PNG

Feature	CNG (Compressed Natural Gas)	PNG (Piped Natural Gas)	LPG (Liquefied Petroleum Gas)
Nature/Form	Gas (compressed at high pressure)	Gas (supplied via pipeline)	Liquid (stored under pressure)
Main Composition	Methane (CH₄)	Methane (CH₄)	Propane + Butane
Storage	Cylinders (200–250 bar pressure)	No storage (direct supply)	Cylinders (moderate pressure)
Mode of Delivery	Fuel stations (cylinders)	Pipeline network (CGD system)	Cylinders (portable)
Primary Use	Transport fuel (vehicles)	Domestic & industrial use	Domestic & commercial cooking
Safety	Lighter than air (disperses fast)	Lighter than air	Heavier than air (can accumulate at floor level)
Environmental Impact	Cleanest fossil fuel	Clean	More polluting than CNG/PNG

2. Why is India Pushing for PNG? (The Strategic Drivers)

- **Reduction of Import Dependence:** India imports nearly 60% of its LPG requirements.

- 90% of these imports were historically routed through the **Strait of Hormuz** (now a geopolitical flashpoint due to conflict in West Asia).
- **Cost and Efficiency:** Natural gas is much lighter than LPG. While energy density varies slightly, PNG acts as a "drop-in replacement" for LPG without requiring significant equipment changes for households.
- **Domestic Production Surplus:** Major fields like the **KG-DWN-98/2 Block (ONGC)** in the **Krishna-Godavari** basin are ramping up production, projected to increase India's total gas production by 10-15%.
- **Infrastructure Efficiency:** Pipelines eliminate the need for the "last-mile delivery" of heavy cylinders via trucks, reducing the carbon footprint of the supply chain.

3. Major Gas Pipelines

- **Location of Natural Gas Fields:** Krishna-Godavari (KG) Basin, Mumbai High, Cauvery Basin and Assam's Digboi, Dibrugarh, Sivasagar regions.
- **Pipeline Geography:** HAJIRA-VIJAIPUR-JAGDISHPUR (HVJ) pipeline, Jagdishpur-Haldia & Bokaro-Dhamra Pipeline (JHBDPL): Part of the Pradhan Mantri Urja Ganga project, Dahej-Uran-Dabhol-Panvel Pipeline (DUPL/DPPL): Operated by GAIL.

4. Regulatory Body: The Petroleum and Natural Gas Regulatory Board (PNGRB)

- **Establishment:** Set up under the PNGRB Act, 2006, effective from March 31, 2006.
- **Mandate:** Regulate downstream activities (refining, processing, storage, transport, distribution, marketing, and sale).
- **Functions:** Protects consumer interests, ensures uninterrupted supply, and authorizes City Gas Distribution (CGD) networks.
- **Exclusion:** Upstream activities (production of crude oil and natural gas) are outside its jurisdiction.
- **Appellate Authority:** The Appellate Tribunal for Electricity, established under the Electricity Act 2003, handles appeals against PNGRB decisions.

Q. With reference to the Petroleum and Natural Gas Regulatory Board (PNGRB), consider the following statements:

1. It regulates upstream activities like exploration and production of natural gas.
2. It authorizes City Gas Distribution (CGD) networks.
3. Appeals against its decisions lie with the Appellate Tribunal for Electricity.

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

Answer: A

Explanation:

Statement 1: Incorrect

The PNGRB **does not** regulate upstream activities (exploration and production).

- **Upstream** (Exploration & Production) is regulated by the **Directorate General of Hydrocarbons (DGH)**.
- PNGRB is responsible for **Downstream** activities (refining, processing, storage, transportation, distribution, and sale of petroleum, petroleum products, and natural gas).

Statement 2: Correct

One of the primary functions of PNGRB is to grant authorizations to entities for laying, building, operating, or expanding **City Gas Distribution (CGD)** networks. This includes the infrastructure for both **PNG** (domestic/industrial) and **CNG** (transport).

Statement 3: Correct

Under the **PNGRB Act, 2006**, any person aggrieved by an order or decision made by the Board can file an appeal. These appeals lie with the **Appellate Tribunal for Electricity (APTEL)**, which was established under the Electricity Act, 2003, but also serves as the appellate body for the petroleum and natural gas sector.

2.7. RoDTEP SCHEME

Context

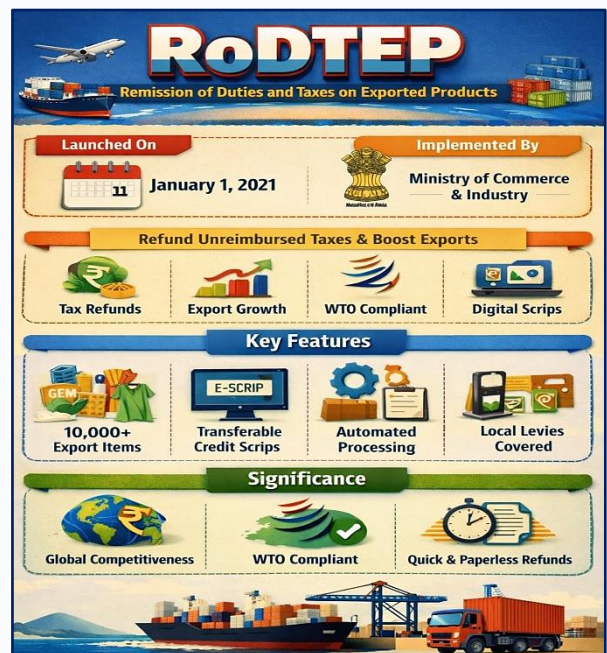
The **Directorate General of Foreign Trade (DGFT)** has extended the RoDTEP scheme for an additional **six months**. This extension aims to provide stability and certainty to Indian exporters amidst global economic fluctuations.

1. What is RoDTEP?

The **Remission of Duties and Taxes on Exported Products (RoDTEP)** is a flagship export promotion scheme aimed at refunding central, state, and local taxes incurred during the manufacturing and distribution of exported goods. By ensuring that such embedded taxes are not exported, the scheme enhances the global competitiveness of Indian products.

2. Launch

The scheme was implemented on **January 1, 2021**, replacing the earlier **Merchandise Exports from India Scheme (MEIS)**, which was found to be non-compliant with WTO norms.



3. Implementing Authority

The scheme is administered by the **Ministry of Commerce and Industry**.

4. Objective

RoDTEP seeks to establish a comprehensive mechanism for reimbursing taxes, duties, and levies that are **not covered under existing refund frameworks** such as GST or Duty Drawback, thereby promoting export growth in both volume and value.

5. Key Features

- **Wide Coverage:** Encompasses over 10,000 export products across sectors such as agriculture, marine, leather, and gems and jewellery.
- **Digital Duty Credit System:** Benefits are provided in the form of transferable duty credit scrips, maintained electronically through the Customs portal.
- **WTO Compliance:** Based strictly on the principle of tax remission, ensuring conformity with **World Trade Organization** rules.
- **Automated Processing:** Rebates are calculated as a percentage of the **Freight On Board (FOB)** value and are automatically processed upon submission of shipping bills.
- **Inclusion of Embedded Taxes:** Covers previously unreimbursed costs such as mandi tax, VAT on fuel used in transportation, and electricity duties.

6. Significance

- **Enhancing Export Competitiveness:** By eliminating embedded taxes, Indian exports become more price-competitive in global markets.
- **Liquidity Support to Exporters:** Transferable digital scrips provide timely financial assistance, particularly during global disruptions such as geopolitical crises.
- **Ease of Doing Business:** The fully digital, paperless system minimizes delays, reduces human intervention, and improves transparency in the refund process.

Q. Which one of the following is the objective of the Remission of Duties and Taxes on Exported Products (RoDTEP) scheme?

- (a) Refund customs duties paid on imported raw materials.
- (b) Reimburse embedded taxes and duties not refunded under existing schemes.
- (c) Provide direct subsidies for export-oriented units.
- (d) Increase export volumes by offering financial incentives.

Answer: B

Explanation:

The core objective of the **Remission of Duties and Taxes on Exported Products (RoDTEP)** scheme is to ensure that taxes and duties paid during the manufacturing and distribution of exported products are **refunded** to the exporter.

- Unlike previous schemes, RoDTEP targets "embedded" costs—taxes that are not captured under GST or other refund mechanisms.
- These include **Mandi Tax**, **Vat on Fuel** used for transportation of export goods, **Electricity Duty** on manufacturing, and **Stamp Duty** on export documents.

2.8. NAMO DRONE DIDI YOJANA (NDDY)

Context

The Union Minister of State for Civil Aviation recently informed the Lok Sabha that **Karnataka** leads the country in training women from **Self-Help Groups (SHGs)** as drone pilots under the Central government's **Namo Drone Didi Yojana**. The initiative aims to modernize agricultural practices while empowering rural women through advanced technical skills.



1. Key Statistics and Performance

- **National Training Totals:** A total of **1,094 SHG members** have been trained as drone pilots across India.
- **State-wise Ranking:**
 - **Karnataka:** Ranked **1st** in the country with **145 members** trained.
 - **Uttar Pradesh:** Ranked **2nd** with **128 members**.
 - **Andhra Pradesh:** Ranked **3rd** with **108 members**.

2. Features of Namu Drone Didi Yojana (NDDY)

- **Objective: Central Sector Scheme** to provide drones to women SHGs to improve efficiency in agricultural practices, enhance crop yield, and break traditional stereotypes of SHG activities (moving beyond home-based products like pickles/papads).
- **Financial Outlay:** The scheme has an allocation of **₹1,261 crore**.
- **Financial assistance:** 80% of the total cost of the drone and accessories (up to a maximum of Rs 8 lakh) is provided by the government.
- **Implementation Period:** Planned for the period from **2023-24 to 2025-26**.
- **Target:** The Central government aims to provide **15,000 drones** to women SHGs under this scheme.
- **Economic Impact:** Trained pilots can earn significant seasonal income (up to ₹1 lakh a month) by spraying medicines/pesticides in maize and paddy farms.
- **Eligibility:** SHG registered under DAY-NRLM (Deendayal Antyodaya Yojana – National Rural Livelihoods Mission).
- **Implementation:** implemented by the Department of Agriculture & Farmers' Welfare (DA&FW), under the Ministry of Agriculture & Farmers Welfare.

- **The Lead Fertilizer Companies (LFCs)** responsible for the States will be the implementing agencies of the scheme at the State level and they will establish necessary coordination with the State Departments, Drone manufacturers, Cluster Level Federations of SHGs/SHGs and the farmers/beneficiaries etc.

3. Benefits of the Namu Drone Didi Scheme

- **Empowerment of Women:** The scheme trains women in drone technology, enabling efficient crop monitoring, soil analysis, and precision farming.
- **Enhancement of Agricultural Efficiency:** Drone technology enables precise, GPS-guided application of pesticides and fertilizers, reducing chemical overuse, environmental impact, and costs for farmers.
- **Skill Development and Knowledge Expansion:** The scheme provides specialized training in drone technology, enabling women to acquire advanced skills in modern agricultural practices such as applying fertilizers, pesticides, and herbicides accurately, ensuring even distribution and optimal usage.
- **Community and Networking Opportunities:** The scheme fosters networking and collaboration among women through forums and workshops, while providing access to experts and mentors for knowledge sharing and professional growth.

Q. Consider the following statements regarding the Namu Drone Didi Yojana (NDDY):

1. It aims to provide drones to women Self-Help Groups (SHGs) to enhance agricultural efficiency.
2. The scheme is implemented as a Centrally Sponsored Scheme.

Which of the statements given above is/are correct?

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

Answer: A

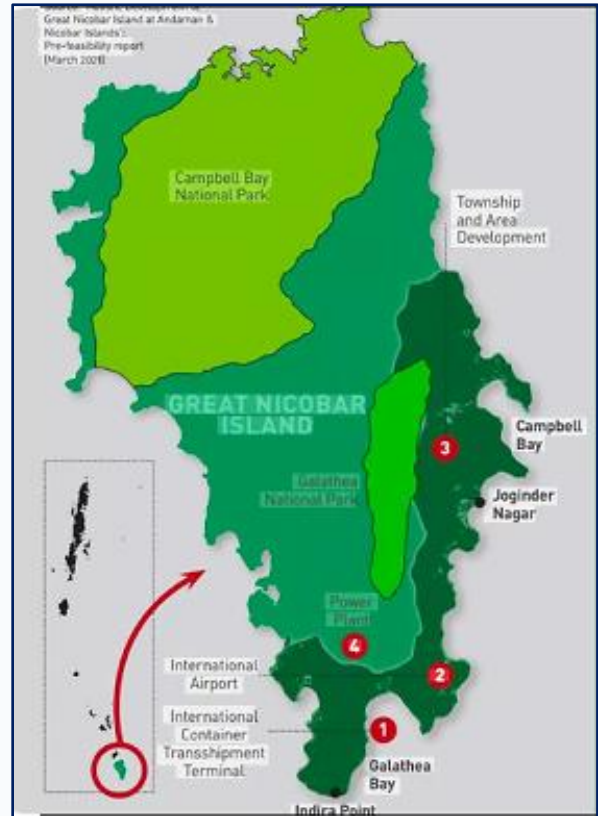
Statement 1 is Correct: The primary objective of the **Namu Drone Didi Yojana (NDDY)** is to empower women **Self-Help Groups (SHGs)** by providing them with drones. This initiative is designed to modernize and improve the efficiency of agricultural practices, such as the precision spraying of pesticides and fertilizers.

Statement 2 is Incorrect: The Namu Drone Didi Yojana is a **Central Sector Scheme**, not a Centrally Sponsored Scheme. In a Central Sector Scheme, 100% of the funding is provided by the Union Government, whereas Centrally Sponsored Schemes involve cost-sharing between the Centre and the States. The NDDY has a total financial outlay of **₹1,261 crore** for the period from 2023-24 to 2025-26

3.9. THE GREAT NICOBAR MEGA-INFRASTRUCTURE PROJECT

Context:

The Union government is moving forward with a **₹92,000-crore mega-infrastructure project** on Great Nicobar Island. Recently, a draft **"Comprehensive Tribal Welfare Plan"** (with a ₹42.52-crore outlay) was circulated to outline the relocation of **Nicobarese tribal communities**. This has triggered fresh concerns regarding **tribal consent, forest rights, and the displacement of indigenous groups**.



1. Key Tribal Groups Involved

- **Nicobarese:** A scheduled tribe primarily affected by the 2004 tsunami and now by the proposed infrastructure project. They are traditionally settled along the coasts.
- **Shompen: A Particularly Vulnerable Tribal Group (PVTG).** They are hunter-gatherers living in the interior forests of Great Nicobar.
- **Legal Protections:** The project is under scrutiny for potential violations of the **Forest Rights Act (2006)** and the requirement of "Informed Consent" from the Tribal Councils.

2. Components of the Project

- The integrated project is designed to transform the island into a major hub through the following developments: **International Transshipment Port, International Airport, Power Plant, Greenfield Township.**
- **Promoting Body:** NITI Aayog
- **Implementing Agency:** Andaman and Nicobar Islands Integrated Development Corporation Limited (ANIIDCO)
 - ANIIDCO was incorporated on 28th June 1988 under the Companies Act 1956 for rapid economic growth of the Islands.
- **Operates under:** Ministry of Home Affairs

3. The Relocation Controversy

- **Ambiguity in the Draft:** The government claims the project will not "disturb or displace" tribes, yet the draft plan specifically uses the term **"relocation"** for 62 enumerated families (approx. 218 persons).
- **Ancestral Lands:** Tribal leaders are demanding a return to ancestral sites like **Pulobhabi** on the west coast, which were lost during the tsunami.

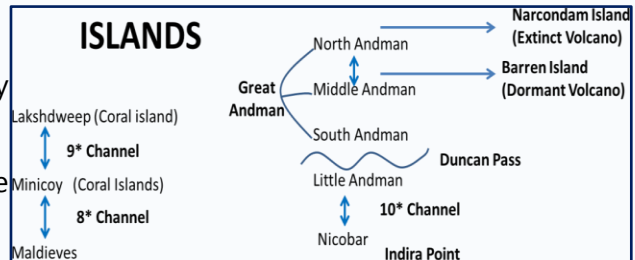
- **Consent Issues:** The Tribal Council withdrew its previous consent in 2022, alleging that forest rights were not settled. The Calcutta High Court is currently hearing petitions regarding whether "genuine consent" was obtained.

4. About Andaman and Nicobar Islands (ANI)

- ANI is a UT with 572 islands (Bay of Bengal), of which 38 are inhabited.
- **Comprises two groups:** Andaman Islands and Nicobar Islands, divided by the 10° Channel.
- **Duncan Passage** separates Little Andaman from South Andaman.
- **Closer to equator:** Located between 6° to 14°

- Separated from Thailand and Myanmar by the **Andaman Sea**.

- Island chain is a submerged extension of the **Arakan Mountains**.



- **Dugong** (sea mammal) is the official animal, endemic to the Indo-Pacific coast, especially Andaman.
- In 2018, three islands were renamed to honour **Subhas Chandra Bose**:
 - Ross → Netaji Subhash Chandra Bose Island
 - Neil → Shaheed Island
 - Havelock → Swaraj Island
- In September 2024, the capital of the ANI (Port Blair) was renamed **Sri Vijaya Puram**.

5. PVTGs in Andaman & Nicobar Islands (ANI)

- ANI has **five PVTGs**: Great Andamanese, Jarawa, Onge, Sentinelese, and Shompen.
- They are geographically isolated, depend on hunter-gathering or simple horticulture, have very small populations, and are **highly vulnerable**.
- **Recently**, members of the **Shompen tribe voted for the first time** in the ANI Lok Sabha constituency.

6. Hotspot Status and biodiversity:

- Nicobar fall under the Sundaland Biodiversity Hotspot.
- **Great Nicobar Biosphere Reserve:** It covers 885 km² across **Campbell Bay and Galathea National Parks (core zone)**.

Q. Consider the following statements with reference to the Great Nicobar Island (GNI) Project:

1. The Great Nicobar Project, initiated by Ministry of Ports, Shipping and Waterways, aims to leverage the island's strategic location near the Malacca Strait.
2. The core components of the GNI Project include; an International Container Transshipment Terminal (ICTT), a dual-use military civilian airbase, and a mega solar-gas hybrid power plant.
3. Galathea Bay, included in the project region, is a nesting site of the Leatherback turtle.

Which of the above statements is/are correct?

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

Answer: C

Explanation:

- The Great Nicobar Island (GNI) Development project, officially named the "**Holistic Development of Great Nicobar Island,**" is a massive infrastructure plan spearheaded by NITI Aayog and executed by the Andaman and Nicobar Islands Integrated Development Corporation (ANIIDCO). **So, statement 1 is not correct.**
- The Great Nicobar Island Development Project includes an International Container Transshipment Terminal (ICTT), a greenfield international airport, two greenfield cities, a coastal mass rapid transit system, and a free trade zone. **So, statement 2 is correct**
- Key concerns: Great Nicobar, over 85% rainforest-covered, is a biodiversity hotspot; Galathea Bay, a Ramsar wetland, is a key nesting site for endangered Leatherback turtles. **So, statement 3 is correct.**

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ENVIRONMENT & GEOGRAPHY

3.1. JUNGLE CAT VS. FISHING CAT

Context:

Recently, a study highlighted that the secretive **Jungle Cat (*Felis chaus*)** increasingly requires habitat conservation efforts outside of traditionally protected areas. The report emphasizes that while these felines are adaptable, the rapid conversion of wetlands and scrublands into agricultural or urban landscapes isolating their populations.



1. Jungle Cat (*Felis chaus*)

- **Physical Features:** It is a medium-sized cat with long legs and a short tail. It is distinguished by small **black ear tufts** and a lack of prominent body spots.
- **Behavior:** Unlike most cats, it is **diurnal** (active during the day). It is an agile hunter of rodents, birds, and small reptiles.
- **Habitat:** It inhabits **scrublands, grasslands, and wetlands**. It is highly adaptable and is often found in agricultural fields like sugarcane and cotton.
- **Distribution:** It is the **most widespread** small cat in India, found from the Himalayan foothills to the tip of Kanyakumari.

2. Fishing Cat (*Prionailurus viverrinus*)

- **Physical Features:** It is roughly twice the size of a typical house cat, with a stocky build, short legs, and a powerful tail. It has a **spotted and striped coat** and **partially webbed paws** which aid in swimming.
- **Behavior:** It is a specialist predator that primarily **hunts fish**. It is known to dive into water to catch prey and is predominantly nocturnal.
- **Habitat:** It is an **obligate wetland specialist**. It is strictly found in mangroves, marshes, swamps, and reed beds. It is the **State Animal of West Bengal**.
- **Distribution:** In India, its population is fragmented, with major strongholds in the **Sundarbans**, the **Chilika Lake** (Odisha), and the **Coringa Wildlife Sanctuary** (Andhra Pradesh).

3. Comparative Conservation Status

Feature	Jungle Cat	Fishing Cat
IUCN Red List	Least Concern	Vulnerable
WPA, 1972	Schedule I	Schedule I
CITES	Appendix II	Appendix II
Primary Threat	Habitat fragmentation / Hybridization	Wetland drainage / Mangrove loss

Q. Consider the following statements regarding the Fishing Cat (*Prionailurus viverrinus*):

1. It is the only wild cat in India that possesses partially webbed paws to assist in aquatic movement.
2. It is currently categorized as 'Critically Endangered' on the IUCN Red List due to the rapid loss of mangroves.
3. In India, its distribution is limited only to the Sundarbans and the Western Ghats.

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:

- **STATEMENT 1 IS CORRECT:** The Fishing Cat has **partially webbed paws**, which is a specialized adaptation for swimming and catching fish in wetlands.
- **STATEMENT 2 IS INCORRECT:** The Fishing Cat is categorized as **Vulnerable**, not Critically Endangered, on the IUCN Red List.
- **STATEMENT 3 IS INCORRECT:** While found in the Sundarbans, the Fishing Cat is **not found in the Western Ghats**. Its distribution is mainly along the Eastern Coast (Chilika, Coringa) and the foothills of the Himalayas (Terai region).

3.2. HEATWAVE

Context

The **India Meteorological Department (IMD)** has forecasted an increased number of **heatwave days** across most parts of East, Central, and Northwest India from April to June 2026. This occurs alongside concerns regarding the emergence of a "**super**" **El Niño**, which could potentially diminish monsoon rainfall and disrupt agricultural output.



1. IMD Heatwave Forecast (April–June 2026)

- **Affected Regions:** Above-normal maximum temperatures are expected in East, Northeast, Central India, and the adjoining peninsular regions.
- **Specific States:** Coastal Odisha, West Bengal, Tamil Nadu, Puducherry, Andhra Pradesh, Gujarat, Maharashtra, and Karnataka are likely to see more heatwave days in April.
- **Anomalies:** North India is predicted to experience a cooler-than-normal summer, with the country overall expected to receive **12% more rainfall** in April due to increased western disturbances.

2. The El Niño Factor and Monsoon Performance

- **Super El Niño Concerns:** Forecasts suggest a potential **1+ degree Celsius warming** in the Central Pacific Ocean, a pattern frequently linked to reduced rainfall in India.
- **Impact on Monsoon:** While cooler summers in the north typically lead to less heating of the landmass—reducing the natural "pull" for moisture—experts suggest it is still early to definitively link these to a diminished monsoon.
- **Drought Management:** Climatologists emphasize that if El Niño signals persist through May, the government must prioritize **drought management**.

3. Mechanism of Heatwaves and strategic linkages

A. Geography:

- **Definition:** A heatwave is a period of abnormally high temperatures, more than the normal maximum temperature.
- **IMD Criteria:**
 - **Plains:** Maximum temperature reaches at least **40°C**.
 - **Coast-** The maximum temperature recorded at a station is 37 degrees Celsius or more.
 - **Hilly Regions:** Maximum temperature reaches at least **30°C**.
 - **Departure from Normal:** Heatwave is declared if the departure from normal is **4.5°C to 6.4°C**.

B. Climatology

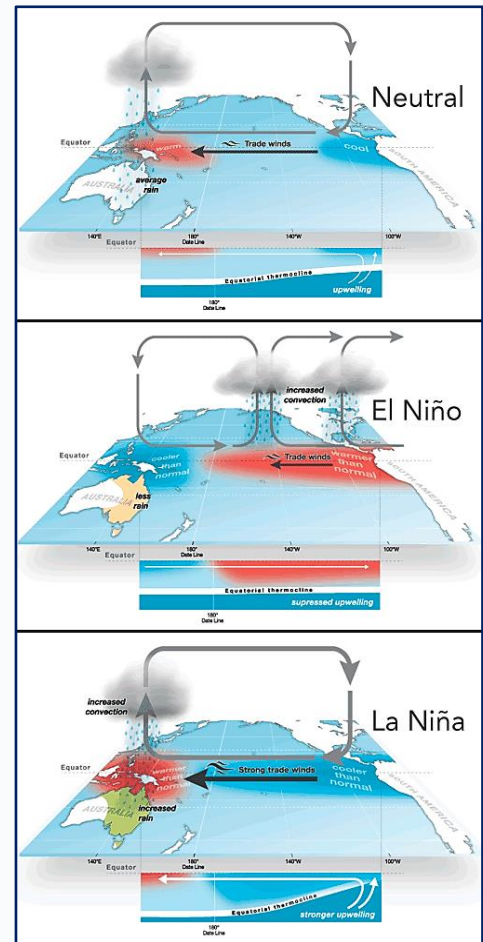
- **El Niño:** The warming of sea surface temperatures in the Central and Eastern Pacific. It usually weakens the trade winds and results in **deficient monsoon rainfall** in India.
- **La Niña:** The cooling phase, often leading to better-than-normal monsoons in India.

C. Impact on Agriculture

- **Kharif Sowing:** Weak rainfall and heatwaves could severely impact the sowing of Kharif crops.
- **Impact on Water Resources:** Heatwaves exacerbate water scarcity issues in India due to drying up of water bodies and decrease in the groundwater table.

4. Causes of Heatwaves

- **Hot & Dry Air Masses:** Large reservoirs of hot air spread via winds, raising temperatures.
- **Low Moisture Levels:** Dry air allows more solar heating and faster daytime temperature rise.
- **Clear Skies:** Absence of clouds permits maximum solar radiation reaching the surface.



- **Anticyclonic Conditions:** Anticyclones are high-pressure systems characterized by sinking air, creating stable, dry, and sunny conditions, which often cause severe heatwaves by trapping heat near the surface.
- **Geographical Factors:** Arid/semi-arid regions (e.g., Northwest India) are more heatwave-prone.
- **Climate Change:** Rising global temperatures intensify and increase frequency of heatwaves.

Q. With reference to Heatwaves in India, consider the following statements:

1. The threshold of maximum temperature for the declaration of a heatwave is lower for plains than hilly regions.
2. A heatwave occurs due to the movement of high atmospheric pressure into an area.

Which of the statements given above is/are correct?

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

Answer: B

Explanation:

Statement 1 is incorrect: According to the criteria set by the **India Meteorological Department (IMD)**, a heatwave is declared when the maximum temperature of a station reaches at least **40°C or more for Plains** and at least **30°C or more for Hilly regions**. Therefore, the threshold for declaring a heatwave is actually **higher for plains** (40°C) than for hilly regions (30°C).

Statement 2 is correct: A heatwave typically occurs when **high atmospheric pressure** moves into an area and settles. This high-pressure system acts like a "lid," trapping heat near the ground and preventing cooler air or clouds from entering the region, which leads to a rapid increase in surface temperatures.

3.3. PLASTIC WASTE MANAGEMENT (AMENDMENT) RULES, 2026

Context

- **Recently**, the Ministry of Environment, Forest and Climate Change (MoEFCC) notified the **Plastic Waste Management (Amendment) Rules, 2026**.
- These rules are in the news because they mandate, for the first time, a minimum percentage of **recycled plastic content** in all new packaging and introduce a centralized digital tracking system using QR codes.
- The amendment aims to accelerate India's transition toward a **Circular Economy** by making "Extended Producer Responsibility" (EPR) targets more stringent and enforceable through independent environmental audits starting from the 2026-27 financial year.



Key Highlights of the 2026 Amendment Rules

1. Mandatory Recycled Content Targets

- **Graded Requirements:** The rules specify that all plastic packaging must contain a minimum percentage of recycled plastic. For **Rigid Plastic Packaging**, the target has been raised to **60%** for the 2026-27 period.
- **Flexible and Multi-layered Plastics:** These categories also have specific, albeit lower, mandatory recycled content goals to encourage the recycling industry while maintaining material integrity.
- **Exceptions:** The rules provide limited exemptions where recycled plastic is legally prohibited, such as in certain highly sensitive medical or food-contact applications as per FSSAI standards.

2. Enhanced "Reuse" Mandates

- **Rigid Plastic Focus:** Large brand owners are now required to meet specific reuse targets, particularly for rigid containers (e.g., beverage bottles, bulk chemical containers).
- **Target Levels:** For specific large-format packaging, the reuse percentage is mandated to reach as high as **85%**, significantly reducing the demand for virgin plastic.

3. New Definitions & Accountability

- **Sellers:** A new category of "Sellers" has been defined to include any entity dealing in plastic raw materials like resins, pellets, or intermediate materials. They must now register and report annually to ensure the source of plastic is tracked.
- **Microplastics:** Defined as any solid plastic particle insoluble in water with dimensions between **1 micron and 1,000 microns**.
- **End-of-Life Disposal:** The rules now provide a clear legal definition for disposal methods like waste-to-energy, co-processing in cement kilns, and road construction.

4. Digital Traceability and QR Codes

- **Mandatory Labeling:** Every piece of plastic packaging must now carry a **traceable QR code** or barcode.
- **Purpose:** This allows regulators and consumers to verify the origin of the plastic, the percentage of recycled content, and the EPR registration status of the producer.

5. Registered Environmental Auditors

- **Independent Verification:** The 2026 rules introduce **Registered Environmental Auditors** who are tasked with certifying the EPR claims made by companies.
- **Anti-Fraud Mechanism:** This step is designed to eliminate "paper-only" compliance and ensures that the reported recycling and reuse figures are physically verified.

6. Strategic Implementation Framework

- **Polluter Pays Principle:** Environmental compensation is strictly levied for non-compliance, with fines ranging from ₹10,000 to ₹15 lakhs depending on the scale of the violation.



- **Four-Stream Segregation:** While linked to the Solid Waste Management Rules 2026, the plastic rules rely on the mandatory segregation of waste into **Wet, Dry (Plastic/Paper/Metal), Sanitary, and Special Care** streams at the source.

Q. With reference to the Plastic Waste Management (Amendment) Rules, 2026, consider the following statements:

1. The rules mandate a minimum of 60% recycled plastic content in rigid plastic packaging for the financial year 2026-27.
2. For the first time, "Sellers" of plastic raw materials like resins and pellets are brought under the regulatory and reporting framework.
3. Registered Environmental Auditors have been introduced to verify the Extended Producer Responsibility (EPR) claims of brand owners.

Which of the statements given above is/are correct?

- A) 1 and 2 only
- B) 2 and 3 only
- C) 1 and 3 only
- D) 1, 2, and 3

Answer: D

Solution:

- **STATEMENT 1 IS CORRECT:** The 2026 amendment sets a high bar for circularity by requiring 60% recycled content in rigid plastics to reduce reliance on virgin materials.
- **STATEMENT 2 IS CORRECT:** By defining and regulating "Sellers" of resins and pellets, the government aims to ensure full traceability of plastic from the raw material stage to the final waste stage.
- **STATEMENT 3 IS CORRECT:** The introduction of third-party Registered Environmental Auditors is a key feature of the 2026 rules to ensure the authenticity of recycling and reuse data submitted by companies.

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Prelims Test Series

4.1. EXTRACELLULAR RNA (EXRNA)

Context

Recently, scientists and researchers from various global institutes have reported that **Extracellular RNA (ExRNA)** derived from bacteria can surprisingly persist in **disinfected drinking water**, challenging the long-held belief that RNA is too fragile to survive outside a cellular environment for extended periods.



What is Extracellular RNA (ExRNA)?

Extracellular RNA refers to RNA molecules that exist outside the cells in which they were originally transcribed. While traditional biology focused on RNA's role within the cell (Protein synthesis), ExRNA represents a paradigm shift in understanding intercellular communication.

- **Presence in Body Fluids:** It is found in almost all biological fluids, including **blood (plasma/serum), saliva, urine, breast milk, and cerebrospinal fluid**.
- **Types of RNA involved:** ExRNA is a heterogeneous population consisting of both **coding RNA (mRNA)** and **non-coding RNA (miRNA, siRNA, lncRNA, and tRNA)**.
- **Stability Mechanism:** Since the extracellular environment is rich in **RNases** (enzymes that degrade RNA), ExRNA survives by traveling in "molecular containers." These include:
 - **Extracellular Vesicles (EVs):** Such as exosomes and microvesicles (lipid-bilayer enclosed).
 - **Lipoprotein Particles:** Such as High-Density Lipoprotein (HDL).
 - **Protein Complexes:** Binding with proteins like **Argonaute2 (Ago2)** which shield them from degradation.

Functions and Significance

1. **Intercellular Communication:** ExRNA acts as a "long-distance" signaling messenger. Cells release ExRNA to deliver genetic instructions to recipient cells, thereby influencing their behavior, gene activation, and protein translation.
2. **Immune Response:** It helps coordinate the body's response to infections, tissue repair, and general development.
3. **Disease Biomarker:** Because ExRNA patterns change during illness, they serve as "liquid biopsies." They are being researched for the early detection of **cancer, heart disease, and neurodegenerative disorders** without the need for invasive tissue biopsies.
4. **Therapeutic Potential:** Start-ups and research centers (like those collaborating with the **University of Hyderabad**) are exploring ExRNA to develop novel therapeutic agents for both communicable and non-communicable diseases.

Q. With reference to Extracellular RNA (ExRNA), consider the following statements:

1. It refers to RNA molecules that remain stable outside the cell by being enclosed in lipid-based molecular containers.
2. ExRNA is exclusively composed of messenger RNA (mRNA) and does not include non-coding RNA varieties.
3. It can act as a signaling medium to mediate communication between distant cells in the human body.

Which of the statements given above is/are correct?

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

Answer: (c)

Solution:

- **STATEMENT 1 IS CORRECT:** ExRNA survives in the extracellular milieu because it is protected by molecular containers like extracellular vesicles (exosomes) or lipoproteins that prevent enzymatic degradation.
- **STATEMENT 2 IS INCORRECT:** ExRNA is a heterogeneous population. It includes not only coding RNA (**mRNA**) but also various non-coding RNAs such as **microRNA (miRNA)**, **small interfering RNA (siRNA)**, and **long non-coding RNA (lncRNA)**.
- **STATEMENT 3 IS CORRECT:** One of the primary biological functions of ExRNA is to serve as a sophisticated long-distance communication system, allowing donor cells to influence the gene expression of recipient cells.

4.2. SPACEX FALCON 9 ROCKET

Context

Recently, scientific assessments published in March 2026 have raised significant concerns regarding the chemical footprint left by the frequent re-entry of large rocket stages like Falcon 9. Researchers have detected a substantial increase in metallic particles, specifically **lithium** and **aluminum oxides**, in the upper atmosphere following uncontrolled re-entries. This "metal rain" is increasingly scrutinized for its potential to trigger chemical reactions that could deplete the **ozone layer** and alter the Earth's thermal balance.



1. Basic Overview of Falcon 9

- **Manufacturer:** Developed by **SpaceX**, it is a two-stage-to-orbit medium-lift launch vehicle.

- **Fuel and Engine:** It is powered by **Merlin engines** which utilize a combination of **Rocket-Grade Kerosene (RP-1)** and **Liquid Oxygen (LOX)**.
- **Propellant Type:** It is a **liquid-propellant** rocket. Unlike the solid boosters used in India's PSLV/GSLV for initial thrust, Falcon 9 relies entirely on liquid engines that can be throttled and restarted.

2. Reusability: The Game Changer

- **First Stage Recovery:** The first stage (booster) is designed to return to Earth and land vertically on a landing zone or a drone ship.
- **Economic Impact:** By reusing the booster (some have flown over **30 times** by 2026), SpaceX has drastically reduced the cost of access to space, making it the most cost-effective launcher globally.
- **Fairing Recovery:** The payload fairings (the protective "clamshell" at the top) are also recovered using parachutes and specialized ships to be refurbished and flown again.

3. Capability and Orbits

- **Low Earth Orbit (LEO):** Capable of carrying approximately **22,800 kg**.
- **Geostationary Transfer Orbit (GTO):** Capable of carrying **8,300 kg** (expendable) or **5,500 kg** (reusable).
- **Crewed Missions:** It is the primary vehicle for the **Crew Dragon** capsule, transporting astronauts to the International Space Station (ISS).

India's Strategic Shift with Falcon 9

India's **NewSpace India Limited (NSIL)**, the commercial arm of ISRO, recently utilized Falcon 9 to launch the **GSAT-N2 (GSAT-20)** satellite.

- **Reason for Choice:** The satellite weighed approximately **4,700 kg**, which exceeded the maximum **4,000 kg** GTO capacity of India's heaviest rocket, the **LVM3 (GSLV Mk-III)**.
- **Significance:** This marked a departure from India's traditional reliance on the European **Ariane** rockets for heavy-lift missions, showcasing a pragmatic shift toward cost-effective private players like SpaceX.

India's Efforts: Building the Reusable Future

To reduce dependence on foreign private entities like SpaceX and lower launch costs, India is pursuing two major tracks:

1. RLV-TD (Reusable Launch Vehicle - Technology Demonstrator)

- **Design:** A winged body vehicle (often called a "Space Plane") that looks like a mini-shuttle.
- **Key Mission (RLV-LEX):** ISRO successfully conducted the **Landing Experiment (LEX)** where the vehicle performed an autonomous high-speed landing on a runway in Chitradurga.
- **Objective:** To master technologies like hypersonic flight, autonomous landing, and powered cruise flight.

2. NGLV (Next Generation Launch Vehicle) - "Project Soorya"

- **Capability:** Designed as a three-stage, partially reusable heavy-lift rocket.
- **Fuel:** It will use **Green Propulsion** (likely Methalox—Liquid Methane and Liquid Oxygen) or Semi-cryogenic engines.

- **Goal:** To replace the LVM3 and provide a 10-tonne payload capacity to GTO in reusable mode, supporting the future **Bharatiya Antariksh Station (BAS)** by 2035.

Q. With reference to the Falcon 9 launch vehicle, consider the following statements:

1. It is the world's first orbital-class rocket capable of vertical landing and reusability of its first stage.
2. It uses a cryogenic engine in its upper stage that functions primarily on Liquid Hydrogen (H₂) and Liquid Oxygen (O₂).
3. Recent studies suggest that the re-entry of its components may lead to the accumulation of aluminum oxides in the stratosphere, potentially affecting the ozone layer.

Which of the statements given above is/are correct?

- A) 1 and 2 only
- B) 2 and 3 only
- C) 1 and 3 only
- D) 1, 2, and 3

Solution: C

- **STATEMENT 1 IS CORRECT:** Falcon 9 is renowned for being the first orbital rocket to achieve reusability through vertical propulsive landing.
- **STATEMENT 2 IS INCORRECT:** Falcon 9 does **not** use Liquid Hydrogen. Both its first and second stages use **RP-1 (Kerosene)** and **Liquid Oxygen**. Cryogenic engines using H₂ are common in GSLV or Ariane rockets, but not Falcon 9.
- **STATEMENT 3 IS CORRECT:** As reported in today's news (**The Hindu**), the metallic debris from frequent re-entries is a growing concern for stratospheric chemistry and the ozone layer.

4.3. SPACE DEBRIS

Context

Recently, an article published by World Economic Forum highlighted the escalating crisis of orbital crowding, noting that space governance has failed to keep pace with the rapid deployment of satellite mega-constellations. According to the Indian Space Situational Assessment Report (ISSAR) 2026 released by ISRO, there are currently 129 trackable objects of Indian origin—including defunct satellites and spent rocket stages—cluttering the Earth's orbit.



1. What is Space Debris?

Space debris encompasses all non-functional, human-made objects in Earth's orbit or those re-entering the atmosphere.

- **Sources:** Defunct satellites spent rocket stages (like those from PSLV or LVM3), fragments from explosions, and even small particles like paint flakes.
- **The Threat:** These objects travel at speeds of approximately **7.8 km/s** in LEO. At such velocities, even a 1-centimeter fragment can deliver the impact of a hand grenade, threatening

active missions like the International Space Station (ISS) or the upcoming **Bharatiya Antariksha Station**.

- **Kessler Syndrome:** This is a theoretical tipping point where the density of objects in LEO is so high that a single collision starts with a chain reaction, creating a cloud of debris that makes space flight and satellite operations impossible for centuries.

2. India's Strategic Initiatives

India has evolved a multi-layered approach to Space Situational Awareness (SSA) and debris management.

A. Project NETRA (Network for space object Tracking and Analysis)

- **Status:** An early warning system with a dedicated control center in Bengaluru.
- **Utility:** It uses high-precision radars and telescopes to detect and track hazards, allowing ISRO to perform **Collision Avoidance Maneuvers (CAM)** for its active satellites.

B. IS4OM (ISRO System for Safe and Sustainable Operations Management)

- **Function:** Launched to centralize India's SSA activities, it provides 24/7 monitoring and coordinates with global agencies to ensure the long-term sustainability of outer space.

C. Debris Free Space Mission (DFSM) 2030

- **Objective:** To ensure no new debris is left in orbit by Indian launches after 2030.
- **Methods:** Includes "Life-extension" missions or "De-orbiting" maneuvers where satellites use remaining fuel to re-enter and burn up in the atmosphere at the end of their functional life.

3. Global Frameworks and Modern Challenges

- **IADC (Inter-Agency Space Debris Coordination Committee):** An international forum of 13 space agencies (including ISRO) that sets the global benchmark for debris mitigation.
- **UNCOPUOS Guidelines:** India aligns its policies with the United Nations' "Guidelines for the Long-term Sustainability of Outer Space Activities."
- **The "25-Year Rule":** A widely accepted international norm that suggests satellites should be de-orbited or moved to a "graveyard orbit" within 25 years of mission completion.
- **Atmospheric Concerns:** Recent research highlights that the frequent re-entry of "mega-constellations" (like Starlink) is increasing the concentration of **aluminum oxides** in the upper atmosphere, which could potentially deplete the ozone layer.

Q. With reference to the Indian Space Situational Assessment Report (ISSAR) and space debris, consider the following statements:

Statement-I: India has committed to achieving a "Zero Debris" status for all its space missions by the year 2030 through the Debris Free Space Mission (DFSM).

Statement-II: The Project NETRA is a dedicated Indian communication satellite designed to provide high-speed internet to the Arctic region.

Which one of the following is correct in respect of the above statements?

- A) Both Statement-I and Statement-II are correct and Statement-II is the correct explanation for Statement-I.

- B) Both Statement-I and Statement-II are correct and Statement-II is not the correct explanation for Statement-I.
- C) Statement-I is correct but Statement-II is incorrect.
- D) Statement-I is incorrect but Statement-II is correct.

Solution: C

- **STATEMENT I IS CORRECT:** India, through ISRO, has officially announced the **Debris Free Space Mission (DFSM)** to ensure zero debris creation by both government and private Indian space actors by 2030.
- **STATEMENT II IS INCORRECT:** **Project NETRA** is not a communication satellite; it is an **Early Warning System** and a network of observational facilities (radars and telescopes) used to track space debris and protect Indian space assets from collisions.

4.4. QDENGGA

Context

Recently, the Subject Expert Committee (SEC) of the **Central Drugs Standard Control Organisation (CDSCO)** has recommended the approval for the import and marketing of the Japanese dengue vaccine, **Qdenga**, in India for the age group of 4 to 60 years. This development marks a significant step as India currently has no licensed dengue vaccine in its public immunization program despite a high disease burden.



1. Basic Profile

- **Manufacturer:** Developed by **Takeda Pharmaceuticals**, a Japanese biopharmaceutical giant.
- **Type of Vaccine:** It is a **Live-Attenuated Vaccine**, meaning it uses a weakened form of the virus that causes the disease.
- **Composition:** It is a **tetravalent** vaccine, designed to protect against all four serotypes of the dengue virus: **DENV-1, DENV-2, DENV-3, and DENV-4**.
- **Backbone:** The vaccine is built on a live-attenuated **dengue serotype 2 (DENV-2)** virus, which provides the genetic "backbone" for all four components.

2. Administration and Efficacy

- **Dosage:** It is a **two-dose** vaccine administered subcutaneously, with a gap of **three months** between doses.
- **Serostatus Independence:** Unlike its predecessor Dengvaxia, Qdenga can be administered to individuals **regardless of previous dengue exposure** (seropositive or seronegative). This eliminates the need for pre-vaccination screening.
- **Global Status:** It was prequalified by the **World Health Organization (WHO)** in May 2024 and is already approved in over 40 countries, including parts of the European Union, Brazil, and Indonesia.

3. Comparison: Qdenga vs. Dengvaxia

Feature	Qdenga (TAK-003)	Dengvaxia (CYD-TDV)
Manufacturer	Takeda (Japan)	Sanofi Pasteur (France)
Platform	DENV-2 Backbone	Yellow Fever Virus Backbone
Pre-testing	Not required	Required (Only for seropositive)
Doses	2 Doses (3 months apart)	3 Doses (6 months apart)
Risk	Lower risk of severe dengue in naive	High risk of severe dengue in naive

4. Indian Context and Manufacturing

- **CDSCO Approval:** The Subject Expert Committee has recommended it for the **4–60 age group** in India.
- **Local Partnership:** Takeda has entered into a partnership with Hyderabad-based **Biological E** to manufacture the vaccine, aiming to produce 100 million doses annually to ensure supply for India and other endemic regions.
- **Indigenous Candidates:** While Qdenga is an imported technology, India is also developing indigenous candidates like **DengiAll** (by Panacea Biotec and ICMR), which is currently in Phase III trials.
- **Current Affairs:** The WHO prequalification and India's recent regulatory nod make it a high-probability topic for Prelims 2026.

Q. With reference to the 'Qdenga' vaccine, recently seen in the news, consider the following statements:

Statement-I: It is a live-attenuated tetravalent vaccine developed to provide protection against all four serotypes of the dengue virus.

Statement-II: Unlike the previously available Dengvaxia, Qdenga requires mandatory pre-vaccination screening to ensure it is only given to people who have had a prior dengue infection.

Which one of the following is correct in respect of the above statements?

- Both Statement-I and Statement-II are correct and Statement-II is the correct explanation for Statement-I.
- Both Statement-I and Statement-II are correct and Statement-II is not the correct explanation for Statement-I.
- Statement-I is correct but Statement-II is incorrect.
- Statement-I is incorrect but Statement-II is correct.

Answer: (c)

Solution:

- **STATEMENT I IS CORRECT:** Qdenga (TAK-003) is indeed a live-attenuated vaccine that uses a DENV-2 backbone to provide tetravalent protection against all four dengue serotypes (DENV-1 to 4).

- **STATEMENT II IS INCORRECT:** This is a false statement because Qdenga's primary advantage is that it is **serostatus-independent**. It can be administered to individuals regardless of whether they have been previously infected with dengue or not, thus **not requiring mandatory pre-vaccination screening**. This distinguishes it from Dengvaxia, which can increase the risk of severe dengue in "seronegative" (never-infected) individuals.

4.5. ISRO'S CALL FOR SCIENTIFIC PROPOSALS

Context

The Indian Space Research Organisation (ISRO) has issued its second **Announcement of Opportunity (AO)**, inviting proposals from the Indian solar physics community for observation time on the **Aditya-L1 mission**. This initiative aims to enhance scientific utilization of the data collected by India's **first dedicated solar observatory**.



Core Mission

- **Primary Objective:** Aditya-L1 is **India's first dedicated space-based solar mission**.
- **Operational Location:** The spacecraft is positioned at the **Sun-Earth L1 (Lagrange Point 1- 1.5 million km from Earth)**.
- **Observation Capabilities:** It conducts continuous, uninterrupted observations of the Sun from its stable orbit at the L1 point.
- **Data Policy:** Scientific data gathered from the mission is regularly released into the **public domain** for global scientific use.

Launch Details:

- Launch Vehicle: PSLV-C57
- Launch Date: 2 September 2023
- Launch Site: Satish Dhawan Space Centre

Technical Significance of L1 (Lagrange Point 1)

- **Uninterrupted View:** A major advantage of placing a satellite in a halo orbit around the L1 point is that it provides a continuous view of the Sun without any occultation or eclipses.
- **Real-time Monitoring:** This position allows for real-time tracking of solar activities and their impact on space weather.

Payloads (Instruments)

- VELC – Visible Emission Line Coronagraph (main payload)
- SUIT – Solar Ultraviolet Imaging Telescope

- ASPEX – Solar wind particle experiment
- PAPA – Plasma Analyser
- MAG – Magnetometer

Key Achievements

- Successfully inserted into halo orbit around L1 (Jan 2024)
- Continuous solar observation started

Key Solar Missions (Globally)

- **PUNCH (NASA):** It uses four suitcase-sized satellites to image the sun's inner corona, bridging the gap between the sun and Earth to understand the origins of solar flares.
- **Proba-3 (ESA):** The European Space Agency's Proba-3 is designed to study the solar corona and solar winds by creating a solar eclipse using two high-precision satellites.
- **Solar Polar Orbit Observatory (China/NSSC):** Planned for 2029, this mission aims to provide high-inclination views of the sun, which is crucial for understanding its magnetic field structure.
- **Parker Solar Probe (NASA):** Currently orbiting in the sun's atmosphere to analyze its structure, launched in 2018.
- **Solar Orbiter (ESA/NASA):** Active since 2020, capturing high-resolution images of the Sun's polar regions.

Q. Match the following solar missions:

Mission	Agency
1. PUNCH	NASA
2. Proba-3	ESA
3. Solar Polar Orbit Observatory	China
4. Parker Solar Probe	ESA

Select the correct answer:

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

Answer: A

Explanation:

No.	Mission	Agency	Status	Key Details
1	PUNCH	NASA	Correct	Stands for <i>Polarimeter to Unify the Corona and Heliosphere</i> . It is a NASA mission designed to image the outer corona of the Sun.
2	Proba-3	ESA	Correct	A European Space Agency (ESA) mission. It is the world's first precision formation-flying mission,

				creating an artificial eclipse to study the Sun's faint corona.
3	Solar Polar Orbit Observatory	China	Correct	A proposed mission by China aimed at orbiting the Sun's poles to study solar magnetic fields and the solar cycle.
4	Parker Solar Probe	ESA	Incorrect	The Parker Solar Probe is a flagship NASA mission (not ESA). It is the first spacecraft to "touch" the Sun by flying through the solar corona.

5.6. INS ARIDHAMAN

Context

- **Recently**, the Union Defence Minister Rajnath Singh formally commissioned **INS Aridhaman (S4)** into the Indian Navy at the Shipbuilding Centre (SBC) in Visakhapatnam. This induction is a landmark event as it marks the completion of a critical phase in India's **Advanced Technology Vessel (ATV)** project.



- The commissioning coincided with the induction of the stealth frigate **INS Taragiri**, further emphasizing India's push toward *Aatmanirbharta* (self-reliance) in the maritime defense sector.

1. Classification and Project

- **Class:** It is the third **Arihant-class** nuclear-powered ballistic missile submarine (**SSBN**).
- **Project:** Developed under the highly classified **Advanced Technology Vessel (ATV) Project**, managed by the DRDO, Department of Atomic Energy (DAE), and the Indian Navy.
- **Name Meaning:** "Aridhaman" is a Sanskrit word translating to "Vanquisher of Foes" or "Destroyer of Enemies."

2. Technical Specifications

- **Displacement:** Approximately **7,000 tonnes**, making it larger and heavier than its predecessors, INS Arihant (~6,000 tonnes) and INS Arighaat.
- **Length:** The submarine features a "stretched hull" (approx. 130 meters) to accommodate additional weaponry and equipment.
- **Propulsion:** Powered by an indigenously developed **83 MW Pressurized Light-Water Reactor (CLWR)**, allowing it to remain submerged for months, limited only by food supplies and crew endurance.
- **Indigenization:** It boasts nearly **70-75% indigenous content**, involving over 200 Indian MSMEs and major firms like L&T and Tata.

3. Weaponry and Firepower

- **Vertical Launch Tubes:** INS Aridhaman is equipped with **8 launch tubes**, which is double the capacity of INS Arihant and INS Arighaat (which have 4 each).
- **Missile Payload:**
 - **K-4 SLBM:** It can carry up to **8 K-4 intermediate-range missiles** with a strike range of **3,500 km**.
 - **K-15 Sagarika:** Alternatively, it can carry **24 K-15 short-range missiles** with a range of **750 km**.
- **Strategic Reach:** The inclusion of K-4 missiles allows the submarine to target deep-seated regional threats while remaining safely stationed in the deep waters of the Indian Ocean or the Bay of Bengal.

4. Advanced Features

- **Stealth:** Features advanced silencing technologies and an upgraded reactor design that significantly reduces its acoustic signature, making it harder to detect.
- **Sensors:** Equipped with the indigenous **USHUS** sonar suite and **Panchendriya** unified fire control systems.

5. Strategic Significance

A. Completion of the Nuclear Triad

- The nuclear triad refers to a country's ability to launch nuclear strikes from land, air, and sea. While land and air legs were established earlier, a survivable sea leg is crucial.
- With three SSBNs (Arihant, Arighaat, and Aridhaman), India can now maintain **Continuous At-Sea Deterrence (CASD)**, ensuring at least one submarine is always on patrol while others are in transit or maintenance.

B. Credible Second-Strike Capability

- As a nation with a **"No First Use" (NFU)** nuclear doctrine, India requires a guaranteed retaliatory capability.
- SSBNs are the most survivable platform in the event of a first strike because they are hidden deep underwater, ensuring that India can deliver a "credible second strike."

Q. With reference to the recently commissioned submarine INS Aridhaman, consider the following statements:

1. It is a nuclear-powered attack submarine (SSN) primarily designed for anti-submarine warfare.
2. It features double the number of vertical launch tubes compared to its predecessor, INS Arihant.
3. It is the first vessel in the Arihant-class to be equipped with the K-4 ballistic missile.

Which of the statements given above is/are correct?

- A) 1 and 2 only
- B) 2 only
- C) 2 and 3 only
- D) 1, 2 and 3

Answer: B

Solution:

- **STATEMENT 1 IS INCORRECT:** INS Aridhaman is a **Nuclear-powered Ballistic Missile Submarine (SSBN)**, not an attack submarine (SSN). Its primary role is strategic deterrence and carrying nuclear missiles, whereas SSNs carry conventional weapons.
- **STATEMENT 2 IS CORRECT:** INS Aridhaman has **8 vertical launch tubes**, whereas INS Arihant and INS Arighaat were equipped with only 4 launch tubes.
- **STATEMENT 3 IS INCORRECT:** While INS Aridhaman is optimized for the K-4, the K-4 missile was also tested and intended for use with previous vessels like INS Arighaat; hence, it is not the "first" class vessel to utilize K-series technology, though it is the first to carry 8 such missiles.

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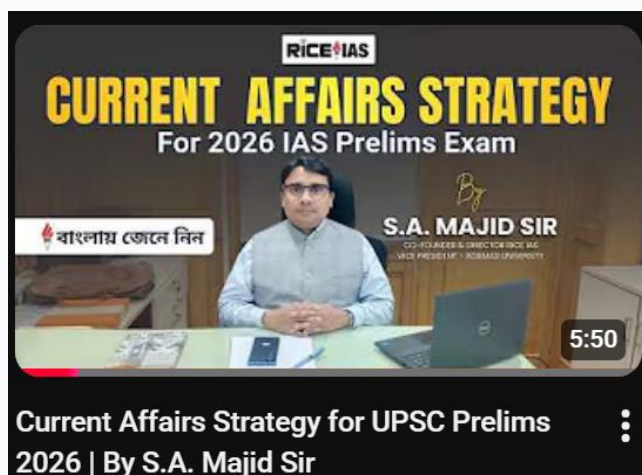
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