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POLITY & GOVERNANCE

1.1. THE PUBLIC ACCOUNTS COMMITTEE: GUARDIAN OF THE NATIONAL PURSE



Context

- Recently, the Lok Sabha Speaker inaugurated a conference of Public Accounts Committee (PAC) chairpersons from 25 states to discuss technology-driven report disposal, CAG audit procedures and strengthening parliamentary oversight.

About PAC

- **Establishment:** The PAC is India's oldest parliamentary committee, introduced in 1921 following the Government of India Act, 1919 (Montford Reforms).
- **Current Mandate:** It is constituted annually under Rule 308 of the Rules of Procedure and Conduct of Business in the Lok Sabha.
- **Composition:** The committee consists of 22 members (15 elected from the Lok Sabha and 7 from the Rajya Sabha).
- **Term and Restrictions:** Members serve a strict one-year term. Ministers are expressly barred from being elected to the committee to prevent conflicts of interest.
- **Leadership:** The Chairperson is appointed by the Lok Sabha Speaker. By a convention established in 1967-68, the Chairperson is always a Member of the Opposition.

Importance of Public Accounts Committee (PAC)

- **Financial Accountability**: Examines government expenditure and ensures public funds are used appropriately.
- **Executive Oversight**: Scrutinises government spending and promotes accountability of the executive to Parliament.
- **CAG Audit Review**: Examines CAG reports on government expenditure and financial irregularities.
- **Financial Discipline**: Identifies wasteful expenditure, financial mismanagement and procedural lapses.
- **Democratic Accountability**: Strengthens parliamentary control over public finances.
- **Transparency:** Promotes responsible, efficient and transparent governance.

Limitations

- It cannot question the wisdom of policy decisions approved by Parliament.
- Its recommendations are advisory in nature and not legally binding on the government.

Q. With respect to the Public Accounts Committee (PAC), consider the following statements:

I. A Minister can be elected as a member of the committee if specially nominated by the Speaker of the Lok Sabha.

II. The committee examines the audit reports of the Comptroller and Auditor General (CAG), excluding those related to Public Sector Undertakings.

Which of the statements given above is/are correct?
(a) I only
(b) II only
(c) Both I and II
(d) Neither I nor II
Answer: (b)
Explanation:
Statement I is incorrect. According to parliamentary rules, a Minister is strictly barred from being elected as a member of the PAC to maintain independent scrutiny over the executive.
Statement II is correct. The PAC examines CAG reports concerning government expenditure and finance accounts, but reports relating strictly to Public Undertakings are examined separately by the Committee on Public Undertakings (CoPU).

1.2. FAST TRACK SPECIAL COURTS (FTSCs)

Context



- Recently, the Union Cabinet approved a five-year extension of the Centrally Sponsored Scheme (CSS) for Fast Track Special Courts (FTSCs), including exclusive POCSO courts, from April 1, 2026, to March 31, 2031.

About Fast Track Courts (FTCs)

- **Meaning:** Fast Track Courts are special courts established to ensure the speedy disposal of cases involving serious offences and matters requiring priority judicial attention.
- **Legal Framework**: There is no single central legislation governing the establishment and functioning of all Fast Track Courts.
- **Recommendation:** The **Fourteenth Finance Commission** (2015–2020) recommended the establishment of 1,800 FTCs.
- **Administrative Jurisdiction:** The establishment and functioning of subordinate courts, including Fast Track Courts (FTCs), fall within the domain of State Governments in consultation with the respective High Courts.
- **Objective**: To reduce judicial pendency and ensure expeditious trials in cases involving:
  - Heinous crimes such as murder, kidnapping and extortion.
  - Property disputes pending for more than five years.
  - Cases involving vulnerable groups such as women, children, senior citizens and persons with disabilities.
  - Individuals suffering from terminal illnesses.

About Fast Track Special Courts (FTSCs)

- **Establishment:** In 2019, following amendments to criminal laws and directions from the Supreme Court, the Union Government launched a **Centrally Sponsored Scheme** (CSS) to establish Fast Track Special Courts.
- **Nature:** Specialised courts **exclusively dedicated** to the time-bound trial of:
  - Rape cases.
  - Offences under the Protection of Children from Sexual Offences (POCSO) Act, 2012.
- **Funding:** The scheme is partially funded through the **Nirbhaya Fund**.

Constitutional Provisions Governing Fast Track Courts

- **Article 14 – Right to Equality:**
  - The establishment of special courts must comply with the principle of equality before the law.
  - Arbitrary selection of cases for special treatment is constitutionally impermissible.
- **State of West Bengal v. Anwar Ali Sarkar (1952):**
  - The Supreme Court struck down a law that allowed arbitrary selection of cases for trial by special courts.
  - It held that the mere objective of achieving a speedy trial is insufficient to justify discriminatory classification.
  - Such classification must satisfy the test of reasonable classification under Article 14.

Can a Fast-Track Court Be Established to Hear an Individual Case?

- Special courts may be established to handle specific high-priority cases, provided the classification satisfies constitutional requirements.
- **Examples:**
  - **Satyam Computer Services Scam (2010):** The Andhra Pradesh High Court established a special court to exclusively try the accounting scam.
  - **2G Spectrum Allocation Scam (2011):** The Supreme Court directed the establishment of a special court for an exclusive and day-to-day trial of the case.

Speedy Trial and Time Limits

- **Bharatiya Nagarik Suraksha Sanhita (BNSS), 2023:**
  - Recommends that criminal trials should ideally be completed within two years.
  - Trials involving sexual offences should ideally be completed within two months.
- **FTSC Disposal Target:**
  - Each FTSC is expected to dispose of approximately 41–42 cases per quarter.
  - This translates into a target of at least 165 cases annually.

Performance of Fast Track Courts

- **Regular FTCs**: As of January 2026, 862 regular FTCs were functioning across 21 States and Union Territories.

- **FTSCs:** 774 FTSCs, including 398 exclusive POCSO courts, were operational across 29 States and Union Territories.
- **Disposal Rate:** The disposal rate of FTSCs was approximately 96%.

Important Supreme Court Judgments

- **State of West Bengal v. Anwar Ali Sarkar (1952):** Established that special courts must comply with Article 14, and arbitrary classification of cases for speedy trials is constitutionally impermissible.
- **P. Ramachandra Rao v. State of Karnataka (2002):** Courts cannot impose a uniform outer time limit for completing all criminal proceedings, nor can criminal trials be automatically terminated solely because a prescribed period has elapsed.

Q. With reference to Fast Track Courts (FTCs) in India, consider the following statements:

1. The Fourteenth Finance Commission recommended the establishment of 1,800 Fast Track Courts to expedite the disposal of specified categories of cases.
2. The Supreme Court, in State of West Bengal v. Anwar Ali Sarkar (1952), held that the government can arbitrarily select cases for special courts if the objective is speedy trial.
3. The Supreme Court, in P. Ramachandra Rao v. State of Karnataka (2002), held that a uniform outer time limit cannot be prescribed for the conclusion of all criminal proceedings.
4. The establishment of special courts must satisfy the test of reasonable classification under Article 14 of the Constitution.

Which of the statements given above are correct?

(a) 1 and 2 only

(b) 1, 3 and 4 only

(c) 2 and 3 only

(d) 1, 2, 3 and 4

Answer: (b) 1, 3 and 4 only

Explanation

Statement 1 is correct: The Fourteenth Finance Commission (2015–2020) recommended the establishment of 1,800 Fast Track Courts to expedite trials involving heinous crimes, long-pending property disputes and cases involving vulnerable sections of society.

Statement 2 is incorrect: In State of West Bengal v. Anwar Ali Sarkar (1952), the Supreme Court struck down arbitrary classification of cases for trial by special courts. It held that the objective of speedy trial alone cannot justify discriminatory selection of cases.

Statement 3 is correct: In P. Ramachandra Rao v. State of Karnataka (2002), a seven-judge Constitution Bench held that prescribing a uniform outer time limit for the conclusion of all criminal proceedings is neither advisable nor judicially permissible.

Statement 4 is correct: The establishment of special courts must comply with Article 14, which guarantees equality before the law. Classification of cases must have a rational basis and should not be arbitrary.

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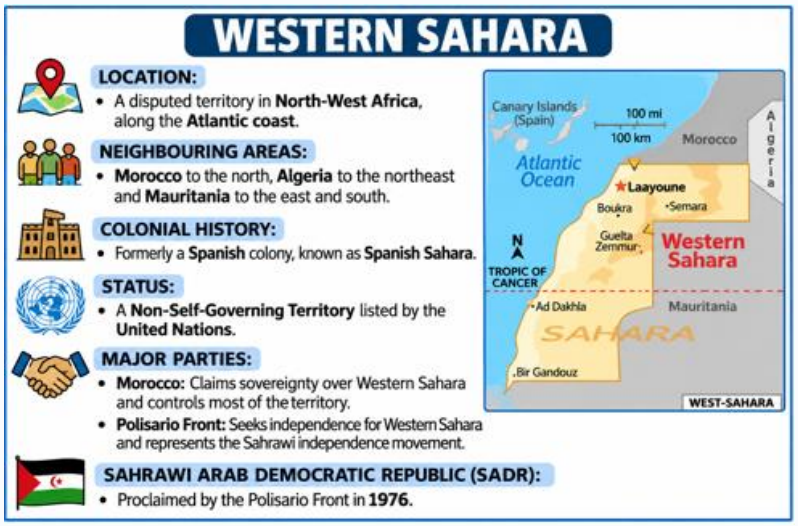
2.1. UNITED NATIONS MISSION FOR THE REFERENDUM IN WESTERN

Context



- Recently, the mandate of the United Nations Mission for the Referendum in Western Sahara (MINURSO) expired on October 31, 2026, after reciprocal vetoes by Russia and the United States blocked competing draft resolutions at the UN Security Council.

About the United Nations Mission for the Referendum in Western Sahara (MINURSO)



- MINURSO is a specialised United Nations peacekeeping mission established to monitor the ceasefire between Morocco and the Polisario Front and facilitate a referendum on self-determination for the people of Western Sahara.
- It was established under UN Security Council Resolution 690 (In 1991).
- It aims to monitor the ceasefire between Morocco and the Polisario Front, facilitate a self-determination referendum for the people of Western Sahara, and prevent military escalation by monitoring security developments.

About Moroccan Berm



- The Moroccan Berm is a long defensive sand wall (1,700-mile) constructed by **Morocco across Western Sahara**.
- It separates areas controlled by Morocco from areas controlled by the Polisario Front.
- It is surrounded by extensive minefields and military installations in several stretches.
- MINURSO monitors military activities on both sides of the berm.

Q. With reference to the United Nations Mission for the Referendum in Western Sahara (MINURSO), consider the following statements:

1. MINURSO was established under UN Security Council Resolution 690 in 1991.
2. The primary objective of MINURSO is to monitor the ceasefire and facilitate a self-determination referendum in Western Sahara.
3. Western Sahara is recognised by the United Nations as a Non-Self-Governing Territory.
4. Renewal of the MINURSO mandate requires the unanimous approval of all five permanent members of the UN Security Council.

Which of the statements given above are correct?

(a) 1 and 2 only

(b) 1, 2 and 3 only

(c) 2, 3 and 4 only

(d) 1, 2, 3 and 4

Answer: (b) 1, 2 and 3 only

Explanation

Statement 1 is correct: MINURSO was established on 29 April 1991 under UN Security Council Resolution 690 to implement the UN Settlement Plan for Western Sahara.

Statement 2 is correct: Its primary objectives include monitoring the ceasefire between Morocco and the Polisario Front and facilitating a referendum on self-determination for the people of Western Sahara.

Statement 3 is correct: Western Sahara is included in the United Nations list of Non-Self-Governing Territories, reflecting its unresolved political status and decolonisation process.

Statement 4 is incorrect: Renewal of the mandate requires at least nine affirmative votes in the 15-member Security Council. A negative vote by any permanent member constitutes a veto. Unanimous approval by all five permanent members is not required; abstention by a permanent member does not constitute a veto.

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3.1. SUPREME COURT ON BENEFICIAL OWNERSHIP DISCLOSURE BY AIFs AND FPIs



Context

- Recently, The Supreme Court of India declined to direct the Securities and Exchange Board of India (SEBI) to mandate full public disclosure of the **beneficial owners** of Alternative Investment Funds (AIFs) and Foreign Portfolio Investors (FPIs).

Key Issues

- **Lack of transparency:** Opaque ownership structures may create risks of market manipulation, money laundering and tax evasion.
- **Legal backing:** SEBI must operate within its statutory powers while framing disclosure requirements.
- **Public interest:** Disclosure requirements must balance market transparency with privacy and legitimate confidentiality concerns.
- **Regulatory framework:** The petition raised concerns about the adequacy of existing disclosure norms for AIFs and FPIs.

What Is Beneficial Ownership?

- Beneficial ownership refers to the ultimate ownership or control of an asset or investment, even when it is held through intermediaries or another legal entity.
- Disclosure helps identify the individuals who ultimately own or control investments.
- It can help address money laundering, tax evasion and market manipulation.

Key Observations of the Supreme Court

- The Court declined to order full public disclosure without an adequate legal basis.
- The Court indicated that public disclosure requirements must be supported by appropriate statutory authority.
- It acknowledged the importance of transparency while considering the scope of SEBI's regulatory powers.

Significance

- **Market transparency:** Beneficial ownership disclosure can help identify the ultimate owners of investments.
- **Financial integrity:** Greater transparency can help prevent money laundering and tax evasion.
- **Regulatory accountability:** Regulators must exercise their powers within the framework of the law.
- **Investor confidence:** Clear disclosure rules can strengthen confidence in India's financial markets.

About Alternative Investment Funds (AIFs)

- AIFs are privately pooled investment vehicles that collect funds from investors for investment according to a defined strategy.
- They are regulated by SEBI under the **SEBI (Alternative Investment Funds) Regulations, 2012**.
- AIFs may invest in assets such as private equity, venture capital and other alternative investments.

About Foreign Portfolio Investors (FPIs)

- FPIs invest in financial assets such as shares, bonds and other securities in Indian financial markets.
- They are regulated by SEBI under the **SEBI (Foreign Portfolio Investors) Regulations, 2019**.
- Their investments contribute to capital flows and liquidity in India's financial markets.

Q. With respect to the regulatory framework of investment vehicles in India, consider the following statements:

I. Alternative Investment Funds (AIFs) are permitted to raise funds directly from the general public to democratize market participation.

II. SEBI mandates a "full look-through" approach without any materiality thresholds for identifying the Ultimate Beneficial Owners (UBOs) of certain objectively identified high-risk FPIs.

III. The Supreme Court of India is legally empowered to issue a mandamus for full public disclosure of AIF owners even in the absence of a specific SEBI regulatory framework.

How many of the statements given above are correct?

(a) Only one

(b) Only two

(c) All three

(d) None

Answer: (a)

Explanation:

- **Statement I is incorrect:** AIFs are privately pooled investment vehicles that are explicitly prohibited from making invitations to the public at large; they raise capital exclusively from sophisticated investors through private placement.
- **Statement II is correct:** To prevent market manipulation and evasion of foreign direct investment norms, SEBI's August 2023 circular mandates certain FPIs to disclose UBOs on a full look-through basis without standard materiality thresholds.
- **Statement III is incorrect:** The Supreme Court clarified that it cannot mandate full public disclosure without the backing of an existing legal framework, emphasizing that formulating such regulations falls exclusively under the domain of the Union government and SEBI.

3.2. STATE'S POWER TO LEVY ADDITIONAL TAX ON SALES TAX



Context

- Recently, a seven-judge Bench of the Supreme Court held that an **additional tax levied by a State legislature** on the sale or purchase of goods does not fall outside the State's legislative competence.

Issue Before the Court

- **Question:** Whether a State Legislature has the legislative competence under Entry 54 of List II of the Seventh Schedule to levy a tax on the sale or purchase of goods on the sales tax payable by a dealer, rather than directly on his turnover.

Why Was the Issue Controversial?

There were two different interpretations:

1. **Argument of the Assessees (Taxpayers)**
    - They argued that the additional levy amounted to a 'Tax on Tax'.
    - According to them, Entry 54 of the State List permits taxation on the sale or purchase of goods, not on an existing tax liability.
    - Therefore, they questioned whether States had the legislative power to impose such a levy.
2. **Argument of the State Governments**
    - The States argued that the additional levy was simply an increase in the existing rate of sales tax.
    - Calculating the additional tax as a percentage of the sales tax payable does not change its basic nature.
    - Hence, it falls within the taxation powers of State Legislatures under Entry 54 of List II.

About the Supreme Court Ruling

- An additional tax, surcharge, or cess calculated as a percentage of sales tax payable is **not an invalid "tax on tax".**
- It constitutes an enhancement in the rate of sales tax and falls squarely within the legislative competence of State Legislatures **under Entry 54 of List II (State List) of the Seventh Schedule.**
- The Court reaffirmed the **1975 judgment in S. Kodar v. State of Kerala**, holding that an additional tax calculated as a percentage of the sales tax payable is essentially an enhancement of the rate of sales tax.

Constitutional Provisions Governing the Levy

- **Article 246 – Distribution of Legislative Powers**:
    - Distributes legislative powers between Parliament and State Legislatures through the three lists in the Seventh Schedule.

- **Seventh Schedule – Entry 54 of List II (State List):**
  - Empowers State Legislatures to levy taxes on the sale or purchase of goods, other than newspapers, subject to the provisions of Entry 92A of List I.
- **Legislative Competence:**
  - State Legislatures can impose taxes on the sale or purchase of goods within the scope of their constitutionally assigned taxation powers.

Significance of the Judgment

- **State Taxation Powers**: Reaffirms the legislative competence of States to impose additional tax or surcharge on sales tax.
- **Nature of Tax:** Clarifies that the method of computation does not necessarily determine the constitutional character of a levy.
- **Federalism**: Reinforces the taxation powers allocated to States under the Seventh Schedule.

Q. Consider the following statements regarding the Supreme Court's verdict on additional sales tax and Entry 54 of the State List:

1. The Supreme Court ruled that a surcharge calculated on existing sales tax is an unconstitutional 'tax on tax'.
2. The Court held that computing a levy as a percentage of sales tax payable is merely an enhancement of the sales tax rate.
3. Following the 101st Constitutional Amendment, Entry 54 of the State List still covers taxes on petroleum products and alcoholic liquor.
4. Article 246A grants concurrent powers to Parliament and State legislatures to levy the Goods and Services Tax (GST).

Which of the statements given above are correct?

(a) 1 and 2 only

(b) 1, 2 and 4 only

(c) 2, 3 and 4 only

(d) 1, 2, 3 and 4

Answer: (c) 2, 3 and 4 only

Statement 1 is incorrect: The Supreme Court unanimously upheld the 1974 S. Kodar judgment, ruling that the surcharge is not an unconstitutional 'tax on tax' and is perfectly within the State's competence.

Statement 2 is correct: The Constitution Bench clarified that an additional tax computed as a percentage of the existing sales tax is legally considered an enhancement of the sales tax rate.

Statement 3 is correct: While GST subsumed most sales taxes, Entry 54 of the State List was amended to retain State taxation powers specifically over petroleum crude, high-speed diesel, petrol, natural gas, aviation turbine fuel, and alcoholic liquor for human consumption.

Statement 4 is correct: Article 246A, inserted by the 101st Amendment Act, 2016, grants both Parliament and State legislatures the concurrent power to make laws regarding GST.

3.3. US ECONOMIC EMBARGO ON CUBA

Context



- Recently, the UN General Assembly (UNGA) adopted its annual resolution titled 'Necessity of Ending the Economic, Commercial and Financial Embargo Imposed by the United States of America against Cuba'.

About the US Economic Embargo on Cuba

- The United States imposed an economic embargo on Cuba in 1960, following the Cuban Revolution and the nationalisation of US-owned properties.
- The embargo was further strengthened through legislation, including the Cuban Democracy Act, 1992 and the Helms–Burton Act, 1996.
- It restricts trade, financial transactions and economic engagement between the two countries.
- The UNGA has annually called for the termination of the embargo since 1992 through non-binding resolutions.

About Cuba

- **Location**: Cuba is an island country in the Caribbean Sea, situated at the confluence of the Caribbean Sea, Gulf of Mexico and Atlantic Ocean.
- **Capital**: Havana.
- **Continent:** North America (Caribbean region).
- **Political System:** Socialist republic with a single-party political system led by the Communist Party of Cuba.
- **Official Language**: Spanish.
- **Geographical Features**: Cuba is the largest island in the Caribbean and forms part of the Greater Antilles.
- **Neighbouring Countries**: It lies south of the United States (Florida), west of Haiti and east of Mexico's Yucatán Peninsula.
- **Major Water Bodies**: Cuba is surrounded by the Atlantic Ocean, Caribbean Sea and Gulf of Mexico. The Florida Strait separates Cuba from the United States.
- **Highest Peak**: Pico Turquino, located in the Sierra Maestra mountain range.

Q. With reference to Cuba, consider the following statements:

1. Cuba is the largest island country in the Caribbean and forms part of the Greater Antilles.
2. Although Spanish is spoken throughout Cuba, the country has no clearly distinct regional dialects.
3. The Andes mountain range is located in Cuba.

Which of the statements given above are correct?

(a) 1 and 2 only

(b) 2 and 3 only

(c) 1 and 3 only

(d) 1, 2 and 3

Answer: A

Explanation:

Statement 1 is correct: Cuba is the largest island country in the Caribbean and is part of the Greater Antilles, along with Hispaniola, Jamaica and Puerto Rico.

Statement 2 is correct: Spanish is the principal language of Cuba. Although there are no local dialects, the island's diverse ethnic groups have influenced speech patterns.

Statement 3 is incorrect: The Andes are in South America, while Cuba's main ranges are the Sierra Maestra, Sierra del Escambray and Cordillera de Guaniguanico.

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4.1. FROM CARBON SINK TO CARBON SOURCE



Context

- A recent study published in the journal Nature found that the **Amazon rainforest** has become a net carbon source rather than a carbon sink.

What is a Carbon Sink and Carbon Source?

- **Carbon Sink:** A natural or artificial system that absorbs more carbon dioxide from the atmosphere than it releases.
    - **Examples**: Forests, oceans and soils.
- **Carbon Source**: A system that releases more carbon dioxide into the atmosphere than it absorbs.
    - **Examples**: Burning fossil fuels, forest fires and deforestation.

About the Amazon Rainforest



- **Location:** The Amazon Basin is located in **South America**, close to the Equator, between approximately 10°N and 10°S. It represents an equatorial climatic region.
- **River System**: The Amazon River originates in the **Andes Mountains in the west and flows eastwards into the Atlantic Ocean.** Numerous tributaries join it, forming the world's largest river basin by area.
- **Countries Covered**: The Amazon River Basin extends across **Brazil, Peru, Bolivia, Ecuador, Colombia and parts of Venezuela.** The wider Amazon biome also extends into Guyana, Suriname and French Guiana.
- **Climate**: The basin experiences a hot, humid and wet equatorial climate throughout the year. Rainfall occurs almost daily, and day and night durations remain nearly equal.
- **Natural Vegetation**: The dense evergreen tropical rainforests are known as **Selvas**. They have tall trees, overlapping branches and dense canopies that restrict sunlight from reaching the forest floor.
- **Important Plant Species**: **Ebony, rosewood, mahogany, rubber and cinchona** are important trees found in the Amazon rainforest. **Lianas (woody climbers)** are also characteristic of these forests.
- **Wildlife:** The Amazon is exceptionally rich in biodiversity. Important animals include jaguars, sloths, monkeys, tapirs, pumas, alligators, anacondas and piranhas.

- **Indigenous Tribes associated with Amazon:** Munduruku, Yanomami and Tikuna.
- **Carbon Storage**: According to a 2026 study published in Nature, the Amazon rainforest stores approximately 123 ± 23 billion tonnes of carbon in vegetation and soils.
- **Moisture Recycling**: Through evapotranspiration, Amazonian forests release water vapour into the atmosphere. This moisture recycling contributes up to half of the region's precipitation.



Key Findings of the Nature Study

- **Methodology:** Scientists measured atmospheric CO_2 concentrations at different altitudes using research aircraft across four Amazonian locations.
- **Major Finding:** The Amazon has become a net carbon source rather than a carbon sink.
- **Carbon Emissions**: Wildfires caused the Amazon to release approximately 1.17 billion metric tonnes more carbon than it absorbed.
- **Rainfall Decline:** Precipitation declined by 17% during the peak dry-season period (August–October) between 1979 and 2018.

Human Activities Behind Amazon Degradation

Human Activity	Change (2010–2024)
Mining area	Increased by 272%
Pasture area	Increased by 19%
Soybean plantations	Expanded by 193%

Impact of Forest Loss on Climate

- Forest loss reduces precipitation, raises temperatures and lengthens the dry season, delaying the onset of the wet season.
- **Precipitation:** Fell by 17% during the dry-season peak (August–October) from 1979 to 2018.
- **Temperature:** Annual temperature rose by 0.9°C during the same period.

Q. Consider the following statements with reference to mining activities in the Amazon region:

1. Gold mining in the Amazon is largely associated with small-scale artisanal mining, locally known as garimpo.
2. The Carajás Mineral Province in Brazil is an important region for the extraction of industrial and critical minerals.
3. Mining activities affect less than 10% of Indigenous lands across the Amazon region.
4. Mercury pollution from artisanal gold mining can contaminate rivers and enter aquatic food chains.

Which of the statements given above are correct?
(a) 1, 2 and 3 only
(b) 1, 2 and 4 only
(c) 2, 3 and 4 only
(d) 1, 2, 3 and 4
Answer: (b) 1, 2 and 4 only
Explanation:
Statement 1 is Correct: Gold is mined through small-scale artisanal operations, known as garimpo, as well as illegal mining networks, particularly in Brazil, Peru and Colombia.
Statement 2 is Correct: The Carajás Mineral Province in Brazil is a major mining region associated with iron ore and other industrial minerals.
Statement 3 is Incorrect: Mining activities affect over 20% of Indigenous lands, covering approximately 4,50,000 sq. km. across more than 1,000 territories.
Statement 4 is Correct: Mercury used in artisanal gold mining contaminates rivers, fish and aquatic food chains, threatening Indigenous and riverine communities.

4.2. CYCLONE MURASU

Context

- Recently, the India Meteorological Department (IMD) issued alerts in several districts of Andhra Pradesh as Cyclone Murasu approached the coast, with the possibility of heavy to extremely heavy rainfall, strong winds and storm surges.



About Cyclone Murasu

- **Cyclone Murasu** was classified as a Severe Cyclonic Storm (SCS) that developed over the Westcentral and adjoining Southwest Bay of Bengal during the active Northeast Monsoon season.
- **According to the IMD classification**, a Severe Cyclonic Storm has sustained surface wind speeds of 48–63 knots (89–117 kmph) and may be accompanied by strong winds, storm surges and heavy to extremely heavy rainfall.

About Naming Convention of Cyclone

- **Contributing Country**: The name Murasu was contributed by India under the tropical cyclone naming system adopted by the WMO/ESCAP Panel on Tropical Cyclones (PTC) in 2020.
- **Meaning:** The term Murasu is derived from Tamil and refers to a traditional war drum or percussion instrument.

- **Naming Sequence:** It followed Cyclone Arnab, contributed by Bangladesh, in the naming list and is followed by Akvan, contributed by Iran.

About IMD Cyclone Warning System

- The India Meteorological Department (IMD) follows a four-stage colour-coded warning system to communicate the severity of approaching cyclones and facilitate timely preparedness and response.

1. **Pre-Cyclone Watch**: Issued at least 72 hours in advance to indicate the possibility of adverse weather associated with an evolving cyclonic system.
2. **Cyclone Alert (Yellow):** Issued at least 48 hours before the expected onset of adverse weather, advising authorities and the public to remain updated and vigilant.
3. **Cyclone Warning (Orange):** Issued at least 24 hours in advance, providing information on the expected landfall, wind intensity, potential damage and storm surges to facilitate preparedness measures.
4. **Post-Landfall Outlook / Landfall Alert (Red):** Issued at least 12 hours before the anticipated landfall, indicating a high level of danger and the need for immediate protective and emergency response measures.

Q. With reference to the naming of tropical cyclones in the North Indian Ocean, consider the following statements:

1. The naming of tropical cyclones is undertaken under the WMO/ESCAP Panel on Tropical Cyclones.
2. India is one of the countries contributing names to the regional cyclone naming list.
3. The India Meteorological Department functions as the Regional Specialised Meteorological Centre for the North Indian Ocean.
4. Each cyclone is named by the country over which it makes landfall.

Which of the statements given above are correct?

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

Answer: (a) 1, 2 and 3 only

Explanation:

- **Statement 1 is correct**: Cyclone naming in the North Indian Ocean region is undertaken through the WMO/ESCAP Panel on Tropical Cyclones.
- **Statement 2 is correct**: India is among the countries that contribute names to the regional list.
- **Statement 3 is correct**: IMD, New Delhi, functions as the Regional Specialised Meteorological Centre (RSMC) responsible for tropical cyclone advisories in the North Indian Ocean.
- **Statement 4 is incorrect**: Cyclone names are selected from a pre-approved regional list contributed by member countries. The country experiencing landfall does not determine the cyclone's name.

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5.1. MATERNAL GENES DETERMINE LEFT- AND RIGHT-HANDED SHELL COILING IN SNAILS



Context

- **Recently**, scientists from the United Kingdom and Japan identified the role of an unconventional myosin gene in determining the left- or right-handed shell coiling in Japanese Euhadra snails.

About Shell Handedness in Snails

- **Meaning:** Shell handedness refers to the direction in which a snail's shell coils.
- **Types**:
  - **Dextral (Right-handed):** The shell coils towards the right.
  - **Sinistral (Left-handed):** The shell coils towards the left.
- Most Euhadra snail species are right-handed, while only four species are predominantly left-handed.
- Opposite-handed snails face difficulties during mating because their reproductive openings are positioned asymmetrically, making successful mating difficult.

Genetic Basis of Shell Handedness

- **Responsible Gene:** An unconventional myosin gene plays a key role in determining shell coiling direction.
- **Researchers identified two variants of this gene**:
  - **S Variant (Sinistral):** Associated with left-handed shell coiling.
  - **D Variant (Dextral):** Associated with right-handed shell coiling.

Role of Maternal Effect

- Snail handedness is determined by the **mother's genotype**, not directly by the offspring's own genotype.
- This is known as the maternal effect, in which the mother's genetic makeup influences the development of her offspring.
- The determination occurs at a very early embryonic stage, before the offspring's own genes begin to express themselves.

About Myosin Protein

- Myosin is a motor protein that interacts with actin filaments to generate mechanical force and movement within cells.
- It plays an important role in:
  - Muscle contraction and body movement.

- Cell division.
- Cell movement and intracellular transport.

- Different variants of myosin may influence the direction of actin filament movement, contributing to cellular asymmetry.

Reproductive Characteristics of Snails

- **Hermaphrodites**: Snails possess both male and female reproductive organs and can produce sperm and eggs.
- **Genital Pore**: The reproductive opening is generally located close to the head, on the right side of the body.
- **Mating**: During mating, two snails exchange sperm through their reproductive organs.

Significance of the Discovery

- Explains how genetic variations can influence left-right asymmetry during embryonic development.
- Provides insights into the relationship between molecular mechanisms and whole-body structural organisation.
- Helps understand the role of motor proteins in cellular development and evolutionary biology.
- Establishes snails as an important model for studying the origin of biological asymmetry.

Q. With reference to shell handedness in snails, consider the following statements:

1. The direction of shell coiling in Euhadra snails is determined exclusively by the offspring's own genetic makeup.
2. The S variant of the myosin gene is associated with left-handed shell coiling.
3. Myosin interacts with actin filaments and plays a role in generating mechanical force within cells.
4. Snails are generally hermaphrodites, possessing both male and female reproductive organs.

Which of the statements given above are correct?

(a) 1 and 2 only

(b) 2, 3 and 4 only

(c) 1, 3 and 4 only

(d) 1, 2, 3 and 4

Answer: (b) 2, 3 and 4 only

Explanation

Statement 1 is incorrect: Shell handedness in Euhadra snails is determined by the mother's genotype rather than directly by the offspring's own genotype. This phenomenon is known as the maternal effect.

Statement 2 is correct: Researchers identified two variants of the myosin gene. The S (sinistral) variant is associated with left-handed shell coiling, while the D (dextral) variant is associated with right-handed shell coiling.

Statement 3 is correct: Myosin is a motor protein that interacts with actin filaments to generate mechanical force. It plays important roles in muscle contraction, cell movement and cell division.

Statement 4 is correct: Snails are generally hermaphrodites, meaning that an individual possesses both male and female reproductive organs and can produce sperm and eggs.

5.2. ICAR'S PURPLE REVOLUTION IN POTATO CULTIVATION

Context

- Recently, the Indian Council of Agricultural Research-Central Potato Research Institute (ICAR-CPRI) has developed several nutrient-rich, colored potato varieties to improve agricultural and nutritional outcomes.



Nutrient-Rich Coloured Potato Varieties Developed by ICAR-CPRI

Potato Variety	Year of Release	Key Characteristics	Nutritional Benefits
Kufri Neelkanth	2018	Purple-skinned specialty potato variety	High antioxidant content
Kufri Manik	2021	Deep-red, round tubers with yellow flesh	Contains anthocyanins, zinc and iron
Kufri Jamunia	2024	Dark-purple skin and purple flesh	Higher levels of Vitamin C, anthocyanins and carotenoids than Kufri Manik and Kufri Neelkanth; also contains zinc and iron

About Kufri Jamunia

- **Developed by:** ICAR–Central Potato Research Institute (ICAR-CPRI), Shimla.
- **Release year:** 2024.
- **Type:** Purple-fleshed, biofortified potato variety.
- **Purpose:** To improve nutritional security through enhanced levels of vitamins, antioxidants and micronutrients.
- **Key Features**
  - **Appearance:** Dark-purple skin and purple flesh; oblong tubers with shallow eyes.
  - **Maturity:** Medium-maturing variety, approximately 90–100 days.
  - **Yield:** 32–35 tonnes per hectare under recommended cultivation practices.
  - **Tubers:** Approximately 10–12 medium-to-large tubers per plant.
  - **Storage:** Medium dormancy of 6–8 weeks and good keeping quality.

- **Recommended region:** Northern, Central and Eastern plains of India.

- **Nutritional Importance**
  - **Kufri Jamunia is rich in:**
  - **Anthocyanins:** Natural pigments responsible for its purple colour, with antioxidant properties.
  - **Vitamin C (ascorbic acid):** Supports immune function and iron absorption.
  - **Carotenoids:** Pigments with antioxidant functions.
  - **Iron and zinc:** Essential micronutrients for human health.

Q. With respect to Kufri Jamunia, a recently released crop variety in India, consider the following statements:

I. It is a biofortified purple potato variety developed by the Indian Council of Agricultural Research-Central Potato Research Institute (ICAR-CPRI).

II. It is characterized by a very short dormancy period, which causes rapid sprouting and makes it unsuitable for long-term storage.

III. Its distinct purple flesh is indicative of a high antioxidant content, alongside enhanced levels of anthocyanins, zinc, and iron.

How many of the statements given above are correct?

(a) Only one

(b) Only two

(c) All three

(d) None

Answer: (b)

Explanation:

- **Statement I is correct:** Kufri Jamunia is a biofortified table variety purple potato developed by the ICAR-CPRI and officially released in 2024 for cultivation in the North Indian plains.
- **Statement II is incorrect:** The variety shows a medium dormancy period of around 6-8 weeks. Because tubers do not sprout quickly, it possesses excellent storage quality with low rottage and minimal weight loss.
- **Statement III is correct:** It is a highly nutritious variety containing elevated levels of ascorbic acid, carotenoids, zinc, and iron. The dark purple flesh specifically indicates high anthocyanin and antioxidant content.

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6.1. UNEARTHING THE CHOLA LEGACY: BRONZE MASTERPIECES OF NAGAPATTINAM



Context

- Recently, the Tamil Nadu State Department of Archaeology (TNSDA) has unearthed 12th-century bronze alloy idols of Lord Nataraja and Goddess Sivagami in Nagapattinam, highlighting the religious traditions and advanced metallurgical skills of the Chola period.

About the Archaeological Discovery

- **Location:** Nagapattinam district, Tamil Nadu.
- **Discovering Agency**: Tamil Nadu State Department of Archaeology (TNSDA).
- **Period**: Chola period (approximately 12th century AD).
- **Depth of Discovery**: The idols were unearthed at a depth of approximately one metre.
- Material: Bronze alloy.
- **Associated Objects**: Both idols were discovered along with their respective pedestals.
- **Historical Significance**: The discovery provides evidence of the religious practices, artistic excellence and metal-sculpture traditions of the Chola period.

Iconographic Features of the Discovered Idols

The dating of these idols to the 12th century AD was established by analyzing their specific **physical structure, iconographic features, and ornamental designs**.

- **Lord Nataraja:** The 110 cm tall bronze sculpture is depicted in the dynamic **'Ananda Tandava'** (dance of bliss) posture, prominently featuring **four arms**.
- **Goddess Sivagami:** The accompanying 82 cm tall idol is gracefully portrayed in the **'Tribhanga'** (three-bend) posture, featuring **two arms**.
- **Pedestals:** Both idols were unearthed at a depth of one metre along with their original, intricately designed **bronze pedestals**.

About Chola Bronze Sculptures

- **Historical Period**: Bronze sculpture reached remarkable artistic refinement under the Chola dynasty (approximately 9th–13th centuries CE).
- **Material**: Chola bronzes were primarily produced using copper-based alloys.
- **Lost-Wax Technique (Cire Perdue):** The traditional method of bronze casting involved creating a wax model, covering it with clay, heating it to remove the wax and pouring molten metal into the resulting mould.

- **Iconography:** These sculptures commonly represented Hindu deities, particularly Shiva, Vishnu and their associated forms.
- **Religious Use**: Bronze images were used in temple rituals and carried in religious processions, allowing devotees to worship deities outside the sanctum.
- **Artistic Features:** Chola bronzes are renowned for their graceful postures, intricate ornamentation, balanced proportions and detailed craftsmanship.

Significance of Nagapattinam in the Chola Era

- **Maritime Hub:** Nagapattinam served as a crucial **port city** and commercial center for the Chola Empire, facilitating robust international trade.
- **Religious Syncretism:** The region is historically celebrated for its religious tolerance, hosting a rich Buddhist heritage (e.g., the royal-patronized **Chudamani Vihara**) alongside vibrant Shaivite and Vaishnavite traditions.
- **Cultural Gateway:** It acted as a primary launching pad for the export of Chola art, culture, and naval expeditions to **Southeast Asia**.

Q. With respect to the recently excavated Chola-era idols and their historical context, consider the following statements:

I. The idol of Lord Nataraja is uniquely depicted in the 'Tribhanga' posture to showcase dynamic movement.

II. The Tamil Nadu State Department of Archaeology (TNSDA) is the nodal agency responsible for this excavation in Nagapattinam.

III. Chola bronze sculptures were traditionally manufactured using the lost-wax casting technique.

How many of the statements given above are correct?

(a) Only one

(b) Only two

(c) All three

(d) None

Answer: B

Explanation:

Statement I is incorrect: The idol of Lord Nataraja is depicted in the dynamic 'Ananda Tandava' posture, whereas it is the Goddess Sivagami idol that is portrayed in the gracefully curved 'Tribhanga' posture.

Statement II is correct: The ongoing excavations in Nagapattinam are being actively conducted by the Tamil Nadu State Department of Archaeology (TNSDA).

Statement III is correct: The world-renowned Chola bronzes were traditionally crafted using the intricate lost-wax casting technique (Cire Perdue).

6.2. LEGACY OF SARDAR VALLABHBHAI PATEL



Context

- India observes the 151st birth anniversary of Sardar Vallabhbhai Patel on October 31, 2026, commemorating his role in national integration and building India's modern administrative framework.

About Sardar Vallabhbhai Patel

- **Birth:** Born on **31st October 1875**, in Nadiad, Gujarat.
- **Education & Career:** Completed law studies in England, earning a prize in **Roman Law**, and returned to India as a barrister in 1913.
- **Title and Legacy:** Popularly known as the **"Iron Man of India"** for his determination and firm approach. He is universally revered as a symbol of **national unity** and resilience.

Role in the Indian National Movement

- **Kheda Satyagraha (1918):** Played a pivotal role demanding tax exemptions for farmers affected by crop failure due to drought.
- **Bardoli Satyagraha (1928):** Led the successful resistance against an unjust tax increase, earning him the revered title **"Sardar"** for his leadership.
- **Civil Disobedience:** Embraced Gandhi's vision, leading actions like the **Salt Satyagraha** in 1930 and facing imprisonment during the **Quit India Movement** (1942).
- **Congress Leadership:** Presided over the **46th session of the Congress in 1931** at **Karachi**, navigating through the complex **Gandhi-Irwin Pact** discussions.
- **Quit India Movement (1942–1945):** Delivered powerful speeches in Bombay in support of the Quit India Resolution; subsequently arrested along with the Congress Working Committee and detained at Ahmednagar Fort until 1945.

Post-Independence Contributions

- **Integration of Princely States:** Spearheaded the integration of **562 princely states** into the Indian Union, overcoming the fragmenting provisions of the **Indian Independence Act of 1947**.
- **Constituent Assembly Role:** Actively led the **Advisory Committee on Fundamental Rights, Minorities, and Tribal and Excluded Areas**.
- **Reinforcing India's Civil Services:** Instrumental in establishing the modern **All India Services**, earning him the title of the **"patron saint of India's civil servants"**.
- **National Civil Services Day:** Celebrated on **21st April** to honor his 1947 speech, where he famously called civil servants the **"steel frame of India"**.

Honoring the Iron Man: National Unity Day & Statue of Unity

- **National Unity Day:** Celebrated annually on **October 31st** (Rashtriya Ekta Diwas) to foster a sense of solidarity, integrity, and inclusiveness among the diverse Indian populace.
- **Statue of Unity:** Inaugurated in 2018 in **Kevadia, Gujarat**, it is the **world's tallest statue** at 182 meters (600 feet).

- **Geographical Location:** Situated on the **Sadhu Bet hillock**, directly overlooking the **Narmada River** and the **Sardar Sarovar Dam** (the second largest gravity dam worldwide).
- **Global Recognition:** In 2020, it was officially included in the list of **eight wonders** of the **Shanghai Cooperation Organisation (SCO)**.

Conclusion

Sardar Patel's unwavering pragmatism and visionary statecraft not only unified a fragmented subcontinent but also laid the resilient institutional foundations upon which modern democratic India stands today.

Q. With respect to the life and political contributions of Sardar Vallabhbhai Patel, consider the following statements:

I. He was honored with the title "Sardar" for his exceptional leadership during the Kheda Satyagraha of 1918.

II. He served as the President of the Karachi session of the Indian National Congress in 1931. III. In the Constituent Assembly, he was the Chairman of the Advisory Committee on Fundamental Rights, Minorities and Tribal and Excluded Areas.

How many of the statements given above are correct?

(a) Only one

(b) Only two

(c) All three

(d) None

Answer: B

Explanation:

- **Statement I is incorrect:** He earned the title **"Sardar"** for his successful leadership during the **Bardoli Satyagraha** of 1928, not the Kheda Satyagraha.
- **Statement II is correct:** He successfully presided over the **46th session** of the Indian National Congress held in **Karachi in 1931**.
- **Statement III is correct:** He played a critical constitutional role by serving as the Chairman of the **Advisory Committee on Fundamental Rights, Minorities, and Tribal and Excluded Areas** in the Constituent Assembly.

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