

# UPSC

# CURRENT AFFAIRS

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# 1. Do protections for Scheduled Castes carry over with religious conversion?

## Core Judgment

### The Supreme Court of India held that:

- A person who converts to Christianity cannot claim Scheduled Caste (SC) status.
- SC protections and benefits are not available after such conversion.
- The Court declared the bar “absolute” with no exceptions.

## Bench & Case Background

### Bench: Justices Prashant Kumar Mishra and Manmohan

- **Case originated from:**
  - A complaint by Pastor Chintada Anand Paul (Andhra Pradesh, 2021)
  - Allegations: caste abuse, assault, threats
- **FIR included provisions under:**
  - Scheduled Castes and Scheduled Tribes (Prevention of Atrocities) Act
  - IPC offences (hurt, intimidation, wrongful restraint)

## Key Legal Question

- Can a person retain SC status and protections after converting to Christianity?

## Legal Framework

- **Based on:**
  - Constitution (Scheduled Castes) Order, 1950

## Article 341 & Article 366(24) of the Constitution

- **Key rule:**
  - Only persons professing Hinduism, Sikhism, or Buddhism qualify as SC.
  - Conversion to Christianity → automatic loss of SC legal status.

## Arguments Presented

### Complainant's Argument

- Caste is birth-based and persists after conversion.
- Produced SC caste certificate (Hindu-Madiga).

### Accused's Argument

- **Complainant:**
  - Converted long ago
- Is an active pastor



- **Therefore:**
  - Not legally SC
  - Cannot invoke SC/ST Act

### Andhra Pradesh High Court View (2025)

- **Andhra Pradesh High Court held:**
  - Caste system is “alien to Christianity”
  - SC/ST Act applies only to legally recognised SC members
  - Case lacked sufficient evidence → proceedings quashed

### Supreme Court’s Key Findings

#### 1. Meaning of “Profess”

- **Religion includes:**
  - Public practice
  - Social and spiritual conduct
  - Being a pastor = clear public profession of Christianity

#### 2. Conversion Ends SC Status

- **Court held:**
  - Conversion leads to immediate “eclipse” of SC status in law
- **Cannot:**
  - Practice another religion
  - And simultaneously claim SC benefits

#### 3. No Dual Identity Allowed

- SC identity and non-eligible religion are:
- “Mutually exclusive”
- Legal and social positions cannot coexist

#### 4. Caste Certificate Not legal entitlement

- Holding a certificate ≠ legal entitlement
- Must align with:
- Constitution (Scheduled Castes) Order, 1950

#### 5. No Reconversion in This Case

- **Court noted:**
  - No return to original religion/community
  - Continued Christian practice → decisive factor

### Important Distinction: SC vs ST

- **For Scheduled Castes:**
  - Religion determines eligibility
- **For Scheduled Tribes:**
  - Religion not decisive
  - Community ties and customs matter





3. Parliament has the power to include or exclude any caste from the list of Scheduled Castes after the initial notification by the President.

Which of the statements given above is/are correct?

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

8. Consider the following statements about the Scheduled Castes and the Scheduled Tribes under the provisions of the Constitution of India:

1. The State can make special provisions relating to their admission to Government educational institutions.
2. The State can make special provisions relating to their admission to private educational institutions aided by the State.
3. The State can make special provisions relating to their admission to private educational institutions not aided by the State.
4. The State can make special provisions relating to their admission to minority educational institutions as described in Article 30.

Which of the statements given above are correct?

- A. 1 and 2 only  
B. 3 and 4 only  
C. 1, 2 and 3 only  
D. 1, 2, 3 and 4

9. Consider the following statements regarding the National Commission for Scheduled Castes (NCSC):

1. It is a statutory body established by an Act of Parliament.
2. It was created after the bifurcation of the earlier combined commission for SCs and STs.
3. It is mentioned under Article 338 of the Constitution of India.

Which of the statements given above are correct?

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

10. Consider the following statements about the composition and appointment of the National Commission for Scheduled Castes (NCSC):

1. The Commission consists of a Chairperson, Vice-Chairperson, and three other members.
2. All members are elected by the Parliament of India.
3. Their conditions of service are determined by the President.

Which of the statements given above are correct?

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

11. Consider the following statements regarding the powers and functions of the National Commission for Scheduled Castes (NCSC):

1. It has powers of a civil court while investigating complaints.
2. It is mandatory for the government to consult the Commission on major policy matters affecting Scheduled Castes.
3. It can enforce its recommendations on the Union and State governments.

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

## 2. India is opposing a China-led WTO investment deal

### Deep Dive

**40 WTO** members raise issues over investment facilitation pact at WTO

**India, Türkiye, Sri Lanka, Nepal**, others oppose China-led deal

**IFD** a key deliverable at WTO MC14 this week

**Developed** members cherry pick own interests

**Investment** not a trade issue, says India

**Türkiye** cites lack of clarity on sectoral exemptions, ecomm inclusion in IFD

**India, South Africa** had blocked IFD proposal in MC13

**Pre, post-establishment** clauses nor clear



### 1. What is the IFD Agreement?

- **The Investment Facilitation for Development (IFD) is a proposed pact at the World Trade Organization to:**
  - Simplify procedures for foreign investment (FDI)
  - Improve transparency and reduce bureaucratic hurdles
  - Promote sustainable development, especially in developing and Least-Developed Countries (LDCs)
- **Focuses on facilitation, not:**
  - Market access
  - Investor protection

- Dispute settlement (ISDS)
- Structured as a plurilateral agreement (only binding on participating members)
- Includes Special & Differential Treatment for developing nations (flexible timelines based on capacity)

## 2. Growing Global Support

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- Support has expanded from 70 countries (2017) to 128 out of 166 WTO members
- Backed by WTO leadership, including Ngozi Okonjo-Iweala
- **Seen as a way to:**
  - Boost global investment flows
  - Create jobs
  - Enable technology transfer

## 3. Why India Opposes the IFD

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- India (along with South Africa) is among the few opponents
- **Key concerns:**
  - Undermines WTO's consensus-based system
  - Encourages plurilateral deals, weakening multilateralism
  - Risks creating a "two-tier WTO" dominated by major economies
  - May sideline critical issues for developing countries (*e.g.*, farm subsidies)
  - Fear: Smaller groups could make rules affecting others without universal agreement

## 4. Strategic "China Angle"

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### Strong overlap with Belt and Road Initiative (BRI):

- 98 of 128 IFD participants are also BRI members
- **Concerns for India:**
  - Standardised rules could facilitate Chinese investments globally
  - May expand China's economic influence, especially in India's neighbourhood
  - Could indirectly strengthen China-led infrastructure networks

## 5. Risk of India's Political Isolation

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### With rising support for IFD:

- India risks being left as the primary opponent
- Even allies like African nations may shift positions
- Upcoming 14<sup>th</sup> WTO Ministerial Conference (March 26, Cameroon) could be decisive

## 6. India's Tactical Trade Strategy

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- India may be using opposition as negotiation leverage
- **Key demand:** Permanent solution on public stockholding of food grains
- Linked to schemes like PMGKAY (feeding ~80 crore people)
- **Issue:**
  - WTO caps farm subsidies at 10%, which India often exceeds
  - India relies on the "peace clause" from the 2013 Bali agreement
- **Goal:**
  - Secure flexibility for food security programs
  - Possibly trade-off with a softer stance on IFD

## 7. Broader Context: WTO under Pressure

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- **WTO's relevance has been questioned, especially after:**
  - Actions during Donald Trump administration
  - Blocking of dispute settlement body appointments
  - IFD seen by some as a way to revitalize WTO, but critics fear it may fragment it
- **WTO stands for the World Trade Organization**
  - It's an international organization that deals with the rules of trade between countries. Its main goal is to make global trade flow smoothly, predictably, and fairly.

### Key points about WTO:

- Founded in 1995
- Headquarters in Geneva, Switzerland
- Has 160+ member countries
- Oversees global trade agreements
- Settles trade disputes between countries
- Works to reduce trade barriers like tariffs and quotas

## India's Role in WTO

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### (a) Founding Member

- India was a member of GATT (1947) and became a founding member of WTO in 1995.

### (b) Voice of Developing Countries

- India represents the interests of developing and least-developed countries, especially in:
  - Agriculture subsidies
  - Food security
  - Public stockholding
  - Special & Differential Treatment (SDT)

### (c) Participation in Negotiations

- **India actively participates in:**
  - Doha Development Round
  - Trade Facilitation Agreement (TFA)
  - Discussions on e-commerce and investment

## 3. Key Issues between WTO and India

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### 1. Agriculture Subsidies

- Developed countries give heavy subsidies to farmers.
- India provides Minimum Support Price (MSP) and public food stockholding.
- WTO rules limit subsidy levels.
- India demands permanent solution for food security programs.



2. India supports the plurilateral approach as it strengthens consensus-based decision-making.
3. India fears that the agreement may restrict domestic policy autonomy regarding foreign investment.

Which of the statements given above are correct?

- |                 |                 |
|-----------------|-----------------|
| A. 1 and 3 only | C. 1 and 2 only |
| B. 2 and 3 only | D. 1, 2 and 3   |

14. Consider the following statements regarding the broader geopolitical and strategic aspects of the IFD Agreement:

1. A majority of countries supporting the IFD are also part of China's Belt and Road Initiative (BRI).
2. The agreement may indirectly strengthen China's overseas investment ecosystem.
3. India's opposition is partly linked to its demand for a permanent solution on public stockholding for food security.

Which of the statements given above are correct?

- |                 |                 |
|-----------------|-----------------|
| A. 1 and 2 only | C. 1, 2 and 3   |
| B. 2 and 3 only | D. 1 and 3 only |

15. The terms 'Agreement on Agriculture', 'Agreement on the Application of Sanitary and Phytosanitary Measures' and 'Peace Clause' appear in the news frequently in the context of the affairs of the:

- A. Food and Agriculture Organization
- B. United Nations Framework Convention on Climate Change
- C. World Trade Organization
- D. United Nations Environment Programme

16. In the context of which of the following do you sometimes find the terms *amber box*, *blue box*, and *green box* in the news?

- |                                     |                                 |
|-------------------------------------|---------------------------------|
| A. World Trade Organization affairs | C. UNFCCC affairs               |
| B. SAARC affairs                    | D. India–EU negotiations on FTA |

17. Consider the following statements:

1. India has ratified the Trade Facilitation Agreement (TFA) of the World Trade Organization.
2. TFA is a part of WTO's Bali Ministerial Package of 2013.
3. TFA came into force in January 2016.

Which of the statements given above is/are correct?

- |                 |                 |
|-----------------|-----------------|
| A. 1 and 2 only | C. 2 and 3 only |
| B. 1 and 3 only | D. 1, 2 and 3   |

# 3. Difference between LPG and LNG, and why West Asia war affected LPG supply in India

The effective halt of vessel movement through the Strait of Hormuz due to the West Asia conflict has severely disrupted India's hydrocarbon supplies, especially LPG and LNG.

## LPG faces the biggest shock

- India imports ~60% of its LPG needs  
~90% of these imports pass through the Strait
- Result:** ~54% of total LPG supply disrupted
- Government is cutting supplies to commercial & industrial users to protect household consumption.
  - Natural gas (LNG) impact is moderate but significant
  - India imports ~50% of its natural gas as LNG
  - 55–60% of LNG comes via the Strait
- Result:** ~30% of gas supply affected
- Supplies to industries reduced; household PNG & CNG remain protected

## Why LPG is More Vulnerable than LNG

- Higher import dependence via one route makes LPG more exposed
- Limited immediate substitutes for household cooking fuel
- **Massive user base:** ~33.3 crore LPG connections vs ~1.5 crore PNG users

LPG	LNG
<b>1 Composition</b> LPG: A mix of propane (C <sub>3</sub> H <sub>8</sub> ) and butane (C <sub>4</sub> H <sub>10</sub> ).	<b>1 Composition</b> LNG: Primarily methane (CH <sub>4</sub> ) with traces of ethane and propane.
<b>2 Storage &amp; Temperature</b> LPG: Stored at ambient temperature under moderate pressure (5-10 bar) in pressurized tanks.	<b>2 Storage &amp; Temperature</b> LNG: Stored at -162°C (-260°F) in cryogenic tanks at atmospheric pressure.
<b>3 Density &amp; Energy Content</b> LPG: Denser (0.55–0.58 kg/L) with higher energy per liter.	<b>3 Density &amp; Energy Content</b> LNG: Lighter (0.45 kg/L) but has higher energy per kilogram.
<b>4 Applications</b> LPG: <ul style="list-style-type: none"> <li>✓ Cooking (household gas cylinders)</li> <li>✓ Heating</li> <li>✓ Autogas (LPG-powered vehicles)</li> <li>✓ Industrial processes</li> </ul>	<b>4 Applications</b> LNG: <ul style="list-style-type: none"> <li>✓ Power generation</li> <li>✓ Industrial fuel</li> <li>✓ Marine fuel (LNG-powered ships)</li> <li>✓ Alternative to diesel in heavy transport</li> </ul>
<b>5 Safety Considerations</b> LPG: <ul style="list-style-type: none"> <li>• Heavier than air, can accumulate in low areas, increasing explosion risk.</li> <li>• Easier to handle and transport than LNG.</li> </ul>	<b>5 Safety Considerations</b> LNG: <ul style="list-style-type: none"> <li>• Lighter than air, disperses quickly if leaked, reducing explosion risk.</li> <li>• Requires special cryogenic handling to prevent burns.</li> </ul>
<b>6 Source &amp; Production</b> LPG: A byproduct of natural gas processing and crude oil refining.	<b>6 Source &amp; Production</b> LNG: Extracted from natural gas fields, purified, and cooled to liquid form.

**Key Takeaways**

While LNG is an emerging fuel for industrial and transportation sectors due to its lower carbon footprint, LPG remains a crucial energy source for domestic and commercial heating. Both have their advantages depending on storage, application, and safety requirements.

## LPG vs LNG / PNG: Key Differences

### LPG (Liquefied Petroleum Gas)

- Mix of propane & butane
- Stored in cylinders → highly portable
- Widely used for cooking, heating, rural access
- Heavier than air → higher safety risk in leaks

### LNG (Liquefied Natural Gas)

- Mostly methane, cryogenically cooled (-160°C)
- Transport fuel → converted back to natural gas

- **Distributed as:**
  - PNG (Piped Natural Gas) for homes
  - CNG for vehicles
  - Lighter than air → safer in case of leaks

### Government Response Measures

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- Protecting households first
- Uninterrupted LPG supply to domestic users
- Priority gas allocation to PNG homes & CNG transport
- Boosting domestic LPG production
- Refiners directed to maximise output
- Diversion of petrochemical feedstock
- Domestic production up 40%, now meets ~55% of demand

### Demand management

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- **Increased refill waiting period:**
  - Urban: 21 → 25 days
  - Rural: up to 45 days
- Steps to prevent hoarding

### Alternative fuels activated

- Kerosene, fuel oil, biomass, coal for industries

### Push for PNG Adoption

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- Govt urging consumers to shift from LPG to PNG where available
- **Incentives offered:**
  - Free gas volumes
  - Waiver of connection charges
  - ~60 lakh households can immediately switch within existing network areas
  - States asked to accelerate pipeline expansion

## QUESTIONS

18. Consider the following statements regarding LPG and LNG:

1. LPG primarily consists of methane, while LNG consists of propane and butane.
2. LPG is stored under pressure at room temperature, whereas LNG is stored at very low temperatures.
3. LNG occupies significantly less volume than natural gas in its gaseous form.

Which of the statements given above are correct?

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

19. Consider the following statements:

1. LPG is heavier than air and tends to accumulate near the ground when leaked.
2. LNG is lighter than air and disperses quickly when released.
3. LPG is generally considered safer than LNG in case of leakage.

Which of the statements given above are correct?

- |                 |                 |
|-----------------|-----------------|
| A. 1 and 2 only | C. 1 and 3 only |
| B. 2 and 3 only | D. 1, 2 and 3   |

20. Consider the following statements regarding applications of LPG and LNG:

1. LPG is widely used as a domestic cooking fuel and for industrial heating processes.
2. LNG is mainly used for long-distance transportation of natural gas and power generation after regasification.
3. LNG is commonly stored and distributed through cylinders for household use.

Which of the statements given above are correct?

- |                 |                 |
|-----------------|-----------------|
| A. 1 and 2 only | C. 1 and 3 only |
| B. 2 and 3 only | D. 1, 2 and 3   |

21. Consider the following statements regarding India's LPG and LNG import vulnerability:

1. A majority of India's LPG imports pass through the Strait of Hormuz.
2. India imports a higher proportion of LNG compared to LPG.
3. Disruption in the Strait affects LPG supply more severely than LNG supply.

Which of the statements given above are correct?

- |                 |                 |
|-----------------|-----------------|
| A. 1 and 3 only | C. 1 and 2 only |
| B. 2 and 3 only | D. 1, 2 and 3   |

22. Consider the following statements regarding LPG and LNG characteristics and usage:

1. LPG is stored in cylinders and widely used for domestic cooking.
2. LNG is directly supplied to households in liquid form through pipelines.
3. PNG is derived from LNG after regasification.

Which of the statements given above are correct?

- |                 |                 |
|-----------------|-----------------|
| A. 1 and 3 only | C. 1 and 2 only |
| B. 2 and 3 only | D. 1, 2 and 3   |

# 4. What is the idea of Universal Basic Income?



- **Universal Basic Income (UBI)** is a social welfare proposal in which all the beneficiaries regularly receive a guaranteed income in the form of an unconditional transfer payment.
- The goals of a basic income system are to alleviate poverty and replace other need-based social programs that potentially require greater bureaucratic involvement.
- **UBI is typically intended to reach all (or a very large portion of the population) with no (or minimal) conditions.**

## What are the advantages and disadvantages of Universal Basic Income (UBI)?

### Advantages:

- **Poverty Alleviation:** Reduces poverty and income inequality by providing a minimum income floor for everyone, especially the most vulnerable and marginalized groups. It can also help people afford basic needs such as food, health, education, and housing.
- **Health Stimulus:** Improves physical and mental health by reducing stress, anxiety, and depression associated with poverty and financial insecurity. It can also enable people to access better health care, sanitation, and nutrition.
- **Simplified Welfare System:** Can streamline the existing welfare system by replacing various targeted social assistance programs. This reduces administrative costs and eliminates the complexities associated with means-testing, eligibility requirements, and benefit cliffs.
- **Enhancing Individual Freedom:** UBI provides individuals with financial security and greater freedom to make choices about their work, education, and personal lives.

- **Economic stimulus:** Injects money directly into the hands of individuals, stimulating consumer spending and driving economic growth. It can boost local businesses, create demand for goods and services, and generate employment opportunities.
- It can empower people to pursue entrepreneurship, take risks, and engage in creative or socially beneficial activities that may not be economically viable otherwise.

### Disadvantages:

- **Cost and Fiscal Sustainability:** UBI is very expensive and would require higher taxes, spending cuts, or debt to finance it. It could also create inflation, distort the labor market, and reduce economic growth.
- **Creates Perverse Incentives:** Decreases motivation to work and reduces productivity and efficiency. It could also create a culture of dependency, entitlement, and laziness. It could also discourage people from acquiring skills, education, and training.
- The current Chief Economic Advisor has objected to UBI as it creates “perverse incentives” in dissuading people from making their own efforts to seek income-generating opportunities.
- **Inflationary Pressures:** It could contribute to inflationary pressures. If everyone receives a fixed amount of money, it may drive up prices for goods and services as businesses adjust their pricing strategies to capture the additional income available in the market.
- **Potential for Dependency:** UBI may create a reliance on government support, and there is a risk that some individuals might become complacent or dependent on the basic income, leading to reduced motivation for personal and professional growth.

### Why Universal Basic Income (UBI) is not Feasible in India?

- **Affordability:** India is an emerging nation with a large population but limited resources.
  - It may be very costly to provide a basic income to each and every citizen, especially at a level that is sufficient to meet their basic needs.
  - The **Economic Survey of 2016-17 estimated that a UBI of Rs. 7,620 per year for every Indian would cost about 4.9% of GDP**, which is more than the combined expenditure on food, fuel, and fertilizer subsidies.
  - **To finance UBI, the government would have to either raise taxes, cut other spending, or increase borrowing, all of which have negative consequences for the economy and society.**
- **Political Feasibility:** India has a complex and diverse political system, with multiple levels of government, parties, and interest groups.
  - It may be difficult to build consensus and support for UBI across different stakeholders, such as politicians, bureaucrats, beneficiaries, and taxpayers.
  - There may also be resistance from those who benefit from the existing welfare schemes or those who oppose redistribution on ideological grounds.
- **Implementation Challenges:** India faces many challenges in delivering public services and transfers effectively and efficiently. There are issues of identification, targeting, delivery, monitoring, and accountability that affect the quality and reach of the existing programmes.
  - UBI would require reliable data, technology, and institutions to execute it properly and avoid leakages, corruption, and exclusion errors.
  - Moreover, India has not achieved a Universal Aadhar enrolment yet so it could be problematic in beneficiary identification and target-based delivery of service.

- **Behavioural Effects:** UBI may have unintended or undesirable effects on the behaviour of the recipients or the society at large.
  - For example, UBI may reduce the motivation to work or acquire skills, leading to lower productivity and efficiency.
  - It may also create a culture of dependency, entitlement, or laziness among the recipients.
  - It may also discourage people from participating in social or civic activities that contribute to the common good.

## What alternatives India can take in place of Universal Basic Income?

- **Quasi UBRI:** QUBRI is a variant of universal basic income (UBI), which is defined as a transfer that is provided universally, unconditionally, and in cash.
  - The idea was proposed by former Chief Economic Adviser to provide a direct cash transfer of Rs 18,000 per year to each rural household in India, except those which are “demonstrably well-off” to tackle agrarian distress.
- **Direct Benefits Transfers (DBT):** This is a scheme that transfers subsidies or cash directly to the bank accounts of the beneficiaries, instead of through intermediaries or in-kind transfers.
  - DBT aims to improve the efficiency, transparency, and accountability of welfare delivery, as well as to reduce leakages and corruption.
  - Schemes like PM Kisan, Pradhanmantri Jan Dhan Yojana etc are fine examples of success of DBT.
- **Conditional Cash Transfers (CCT):** This is a scheme that provides cash to poor households on the condition that they fulfil certain requirements, such as sending their children to school, immunizing them, or attending health check-ups.
  - CCT aims to improve the human capital and long-term outcomes of the poor, as well as to incentivize behavioural change.
- **Other Income Support Schemes:** These are schemes that provide cash or in-kind assistance to specific groups of people who are in need, such as farmers, women, elderly, disabled, etc.
  - These schemes aim to address the specific vulnerabilities and challenges faced by these groups, as well as to promote their empowerment and inclusion.
- **Employment Guarantee Schemes:** India already has a successful example of this with the MGNREGA.
  - Such schemes provide a legal guarantee of employment to rural households for a certain number of days in a year.
  - Expanding and strengthening such programs can ensure that individuals have access to job opportunities and can earn a livelihood.
- **Skill Development and Training:** Investing in skill development and vocational training programs can equip individuals with the necessary skills to secure sustainable employment.
  - By focusing on skill enhancement, the government can enable individuals to find suitable jobs and improve their income prospects.
  - Effective implementation of schemes like PM Kaushal Vikas Yojana (PMKVY), Deen Dayal Upadhyaya Grameen Kaushalya Yojana (DDU-GKY) and PM Rojgar Protsahan Yojana (PMRPY) etc.
- **Universal Basic Services:** Instead of focusing on providing a universal basic income, India can prioritize the provision of essential services such as education, healthcare, clean water, and sanitation.
  - By ensuring access to these services for all citizens, the government can improve the overall standard of living and reduce inequality.

- **Asset-Building Policies:** These are policies that aim to help low-income people accumulate assets such as savings, education, housing, or business capital.
  - They may include matching funds, tax incentives, subsidies, or grants for asset accumulation.
  - The advocates of asset-building policies argue that they can enhance the long-term economic security, social mobility, and empowerment of low-income people better than UBI, and that they can foster a culture of saving and investment.
- **Inclusive Development:** Focus on creating more opportunities and capabilities for people to participate in and contribute to the economy and society, rather than providing them with a fixed amount of money.
  - Inclusive development also addresses the structural causes of poverty and exclusion, such as discrimination, lack of access to education, health, infrastructure, and social protection.

## Income

- Income is the consumption and saving opportunity gained by an entity within a specified timeframe, which is generally expressed in monetary terms.
- Income is difficult to define conceptually and the definition may be different across fields.
- For example, a person's income in an economic sense may be different from their income as defined by law.
- An extremely important definition of income is Haig–Simons income, which defines income as Consumption + Change in net worth and is widely used in economics.
- For households and individuals in the United States, income is defined by tax law as a sum that includes any wage, salary, profit, interest payment, rent, or other form of earnings received in a calendar year.
- Discretionary income is often defined as gross income minus taxes and other deductions (*e.g.*, mandatory pension contributions), and is widely used as a basis to compare the welfare of taxpayers.
- In the field of public economics, the concept may comprise the accumulation of both monetary and non-monetary consumption ability, with the former (monetary) being used as a proxy for total income.
- For a firm, gross income can be defined as sum of all revenue minus the cost of goods sold. Net income nets out expenses: net income equals revenue minus cost of goods sold, expenses, depreciation, interest, and taxes.

## QUESTIONS

23. Consider the following statements regarding Universal Basic Income (UBI):

1. UBI is a targeted cash transfer scheme aimed only at below-poverty-line households.
2. UBI payments are unconditional and made to individuals rather than households.
3. UBI aims to replace multiple welfare schemes by simplifying the social security system.

Which of the statements given above is/are correct?

- |                 |                 |
|-----------------|-----------------|
| A. 1 and 2 only | C. 1 and 3 only |
| B. 2 and 3 only | D. 1, 2 and 3   |

24. Consider the following statements about the potential benefits of Universal Basic Income (UBI) in India:

1. UBI can help reduce disguised unemployment in the agriculture sector.
2. UBI may increase bureaucratic complexity due to multiple verification layers.
3. UBI can enhance consumer spending and stimulate economic growth.

Which of the statements given above is/are correct?

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

**25.** Consider the following statements regarding Universal Basic Income (UBI) and social development:

1. UBI can improve nutritional outcomes by increasing purchasing power.
2. UBI directly addresses structural issues like lack of healthcare infrastructure.
3. UBI may enhance financial independence for women and vulnerable groups.

Which of the statements given above is/are correct?

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

**26.** Consider the following statements regarding base year revision in national accounts:

1. Base year revision helps reflect structural changes in the economy.
2. It allows incorporation of new data sources and improved methodologies.
3. It changes the fundamental framework of GDP estimation from production to only expenditure method.

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

**27.** Consider the following statements regarding the new GDP base year:

1. The base year for GDP is being revised from 2011–12 to 2022–23.
2. The year 2022–23 was chosen because it reflects pandemic-induced distortions.
3. The revision aims to capture emerging sectors like digital services and renewable energy.

Which of the statements given above are correct?

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

**28.** Consider the following statements regarding the Consumer Price Index (CPI):

1. The CPI base year is proposed to be revised to 2024.
2. The revision uses data from the Household Consumption Expenditure Survey (HCES) 2023–24.
3. CPI revision excludes rural consumption patterns to focus only on urban inflation.

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

29. Consider the following statements regarding the Index of Industrial Production (IIP):

1. IIP is a quarterly indicator of industrial output.
2. It is used as an input in estimating Gross Value Added (GVA) of manufacturing.
3. The base year revision of IIP is being aligned with national accounts revision.

Which of the statements given above are correct?

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

## 5. North-South divides



- The term ‘Global South’, in conjunction with ‘Global North’, was first used in 1967 by the American academic Carl Oglesby to refer to the “centuries of dominance” that some countries (the North) have exercised over others (the South).
- It became much more popular by the turn of the century.
- This categorisation is ubiquitous in international development and political discourse.
- While traditionally powerful, industrialised nations are seen as the ‘Global North’, the ‘Global South’ refers to nations further behind in their development journeys.
- The South — which is not the same as the geographical south, or the southern hemisphere — includes countries in Africa, Asia, Latin America, and Oceania (sans Australia and New Zealand) whereas the North includes countries of Europe, the United States, Canada and Australia-New Zealand.

- Notably, the North still shares hierarchical relations with the South in the international order, which is perhaps the best reflected in the make-up and workings of international forums and institutions.
- The Global South forms one side of the divide; on other is the Global North (broadly comprising Northern America and Europe, Israel, Japan and South Korea, as well as Australia and New Zealand, according to the UNCTAD).
- As such, the terms Global North and Global South do not refer to the cardinal directions north and south as many of the Global South countries are geographically located in the Northern Hemisphere.
- Countries that are developed are considered as Global North countries, while those developing are considered as Global South countries.
- The term as used by governmental and developmental organizations was first introduced as a more open and value-free alternative to “Third World” and similarly potentially “valuing” terms like developing countries. Countries of the Global South have been described as newly industrialized or are in the process of industrializing, and are frequently current or former subjects of colonialism.
- The Global North generally correlates with the Western world, while the South largely corresponds with the developing countries and the Eastern world.
- The two groups are often defined in terms of their differing levels of wealth, economic development, income inequality, democracy, and political and economic freedom, as defined by freedom indices.
- States that are generally seen as part of the Global North tend to be wealthier and less unequal.
- They are developed countries, which export technologically advanced manufactured products.
- Southern states are generally poorer developing countries with younger, more fragile democracies that are heavily dependent on primary sector exports; many of the Southern states also share a common history of past colonialism under Northern states.
- Nevertheless, the divide between the North and the South is being challenged.
- South-South cooperation (SSC) has increased to “challenge the political and economic dominance of the North.”
- This cooperation has become a popular political and economic concept following geographical migration of manufacturing and production activity from the North to the Global South, and the diplomatic actions of several states like China.
- Used in several books and American Literature special issue, the term Global South recently became prominent in U.S. literature.

## Genesis of the divide

- To understand how the North-South divide in international affairs works, one first needs to understand how it came into existence.
- Simply put, the North-South divide is a product of colonialism and the hierarchical relations between colonial empires and the colonised.
- As the colonial powers industrialised and developed first, exploiting labour and resources from their colonies, an ever-growing imbalance of power emerged.
- This imbalance of power continues to dictate relations between modern nation states, largely mirroring the North-South divide.
- Even after the emergence of the post-World War II international order, with its promise of decolonisation and democracy, these hierarchies in the international sphere did not disappear.
- As Alexander Barder wrote in *Empire Within: International hierarchy and its imperial laboratories of governance* (2015), while “canonical approaches to international theory continue to...obfuscate the reverberating impacts of such hierarchical relations”, these relations endure, both in the economic gap between the North and South, and the institutions that are charged with global governance.

## Gs of North, Gs of South

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- Nearly all the international institutions and fora that emerged post-1945 reflect the North-South divide — from the United Nations and its offshoots to financial institutions such as the World Bank and IMF to the various “Gs”, or constellations of nations with shared interests.
- Much before the G20 came into being, the G7 came up, during the economic crises of the 1970s. It comprised France, Canada, Italy, West Germany, the United States, the United Kingdom and Japan — the strongest economic powers of the time.
- There were other ‘Gs’ too, notably among nations from the South, such as the G77 (1964) and the G24 (1971). These largely unsuccessful groupings were born out of a desire to counterbalance the dominance of the North in global governance. But by doing so, they too affirmed rather than challenged the North-South dichotomy.
- **As Karoline Postel-Vinay puts it in The G20: A new geopolitical order (2011):** “All of the ‘Gs’ that have come into being since the postwar period show evidence of “asymmetric global governance”, to use Roy Culpeper’s expression.” They were either groupings of the North or groupings of the South.

## The rise of China, India, Brazil

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- However, entering into the last decade of the 20<sup>th</sup> century, the North-South divide, while still very much in existence, was no longer as clear cut as earlier.
- Emerging economic powers such as China, India, and Brazil exhibited characteristics of both the North and the South.
- On one hand, their gross national income could rival that of richer Global North nations.
- On the other hand, socially and politically, they were grappling with challenges that are typical to the Global South. Despite the breadth and depth of their socio-economic challenges, the sheer weight of their populations and the growing size of their economies underlined the significance of these countries to the rest of the world.
- This is why the G20 – where nations from both the Global North and South are equal members – is important. “...What the constitution of the G20 points up is that it is impossible to consider the world according to a clear division between North and South and settle for a dialogue that is confined to this overly simplistic representation.”
- The G20 was founded in the aftermath of the Asian financial crisis, but it became truly important in global geopolitics post the 2008 global economic crisis.
- As much of the world reeled from the effects of the recession, it was obvious that only North countries could not provide all solutions, and that the Global South needed to have a greater say in the way global challenges were addressed.
- The shift of the balance of power from advanced market-economy countries to emerging giants — especially China, India and Brazil — made clear the need to include both kinds of actors as full equals...
- This development rise of the G20 was inevitable and necessary for effective global governance.

## G20

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- The G20 or Group of 20 is an intergovernmental forum comprising 19 countries and the European Union (EU).
- It works to address major issues related to the global economy, such as international financial stability, climate change mitigation and sustainable development.
- The G20 is composed of most of the world’s largest economies’ finance ministries, including both industrialised and developing nations; it accounts for around 80% of gross world product (GWP), 75% of international trade, two-thirds of the global population, and 60% of the world’s land area.
- The G20 was founded in 1999 in response to several world economic crises.

- Since 2008, it has convened at least once a year, with summits involving each member's head of government or state, finance minister, or foreign minister, and other high-ranking officials; the EU is represented by the European Commission and the European Central Bank.
- Other countries, international organizations, and nongovernmental organizations are invited to attend the summits, some permanently.
- In its 2009 summit, the G20 declared itself the primary venue for international economic and financial cooperation.
- The group's stature has risen during the subsequent decade, and it is recognised by analysts as exercising considerable global influence; it is also criticised for its limited membership, lack of enforcement powers, and for the alleged undermining of existing international institutions.
- Summits are often met with protests, particularly by anti-globalization groups.

## G20 Members

- The G20 comprises 21 members: 19 individual countries, the European Union (EU), and the African Union (AU), which joined in 2023. These members represent major global economies, accounting for roughly 85% of global GDP, 75% of international trade, and two-thirds of the world's population.
- Guest invitees include, amongst others, Spain, the United Nations, the World Bank and ASEAN.
- Representatives include, at the leaders' summits, the leaders of nineteen countries and of the European Union, and, at the ministerial-level meetings, the finance ministers and central bank governors of nineteen countries and of the European Union.
- In addition, each year, the G20's guests include Spain; the Chair of ASEAN; two African countries (the chair of the African Union and a representative of the New Partnership for Africa's Development (NEPAD) and a country (sometimes more than one) invited by the presidency, usually from its own region.

## 2026 G20 summit

- The 2026 G20 Summit will be hosted by the United States, with President Donald Trump hosting the leaders' meeting on December 14–15, 2026, at the Trump National Doral Miami in Florida.
- The U.S. Presidency focuses on economic growth, reducing regulatory burdens, securing energy supply chains, and advancing AI, coinciding with the 250<sup>th</sup> anniversary of American independence.



### Key details about the 2026 G20 Summit:

- **Location:** Trump National Doral Miami, Doral, Florida.
- **Date:** December 14–15, 2026.

- **Host/Chair:** U.S. President Donald Trump.
- **Core Agenda:** The U.S. aims to return the G20 to its core economic agenda, focusing on limiting regulatory burdens, securing energy supply chains, and promoting AI innovation.
- **Presidency Focus:** The U.S. assumed the G20 Presidency on December 1, 2025.
- **Context:** The summit will coincide with the 250<sup>th</sup> anniversary of the U.S..
- **Controversy:** The selection of a personal property owned by President Trump has raised ethical concerns regarding conflicts of interest.

## QUESTIONS

**30.** Consider the following statements regarding the Global North and Global South:

1. The terms “Global North” and “Global South” strictly correspond to the geographical Northern and Southern Hemispheres.
2. The concept of the Global South was first used in 1967 by Carl Oglesby.
3. Countries of the Global South are generally characterized by lower levels of industrialisation and higher dependence on primary sector exports.

Which of the statements given above is/are correct?

- |                 |                 |
|-----------------|-----------------|
| A. 2 and 3 only | C. 1 and 3 only |
| B. 1 and 2 only | D. 1, 2 and 3   |

**31.** Consider the following statements about the North–South divide in international relations:

1. The divide primarily emerged due to colonial exploitation and unequal industrial development.
2. Post-World War II global institutions completely eliminated the North–South hierarchy.
3. Institutions such as the IMF and World Bank reflect asymmetries between developed and developing countries.

Which of the statements given above is/are correct?

- |                 |                 |
|-----------------|-----------------|
| A. 1 only       | C. 2 and 3 only |
| B. 1 and 3 only | D. 1, 2 and 3   |

**32.** Consider the following statements regarding the G20:

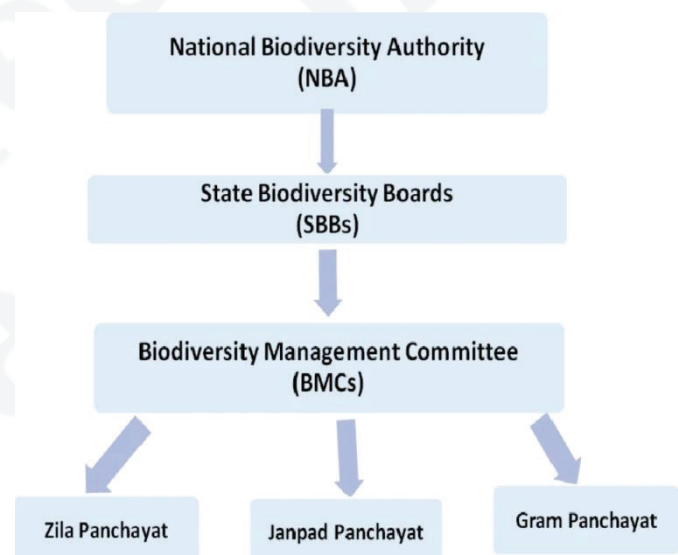
1. The G20 was established in response to the Asian Financial Crisis of 1999.
2. The G20 includes only developed countries and excludes developing economies.
3. The G20 declared itself the primary forum for international economic cooperation in 2009.

Which of the statements given above is/are correct?

- |                 |                 |
|-----------------|-----------------|
| A. 1 and 3 only | C. 1 and 2 only |
| B. 2 only       | D. 1, 2 and 3   |

## 6. National Biodiversity Authority (NBA) to address the growing ecological and socio-economic risks posed by such species across the country

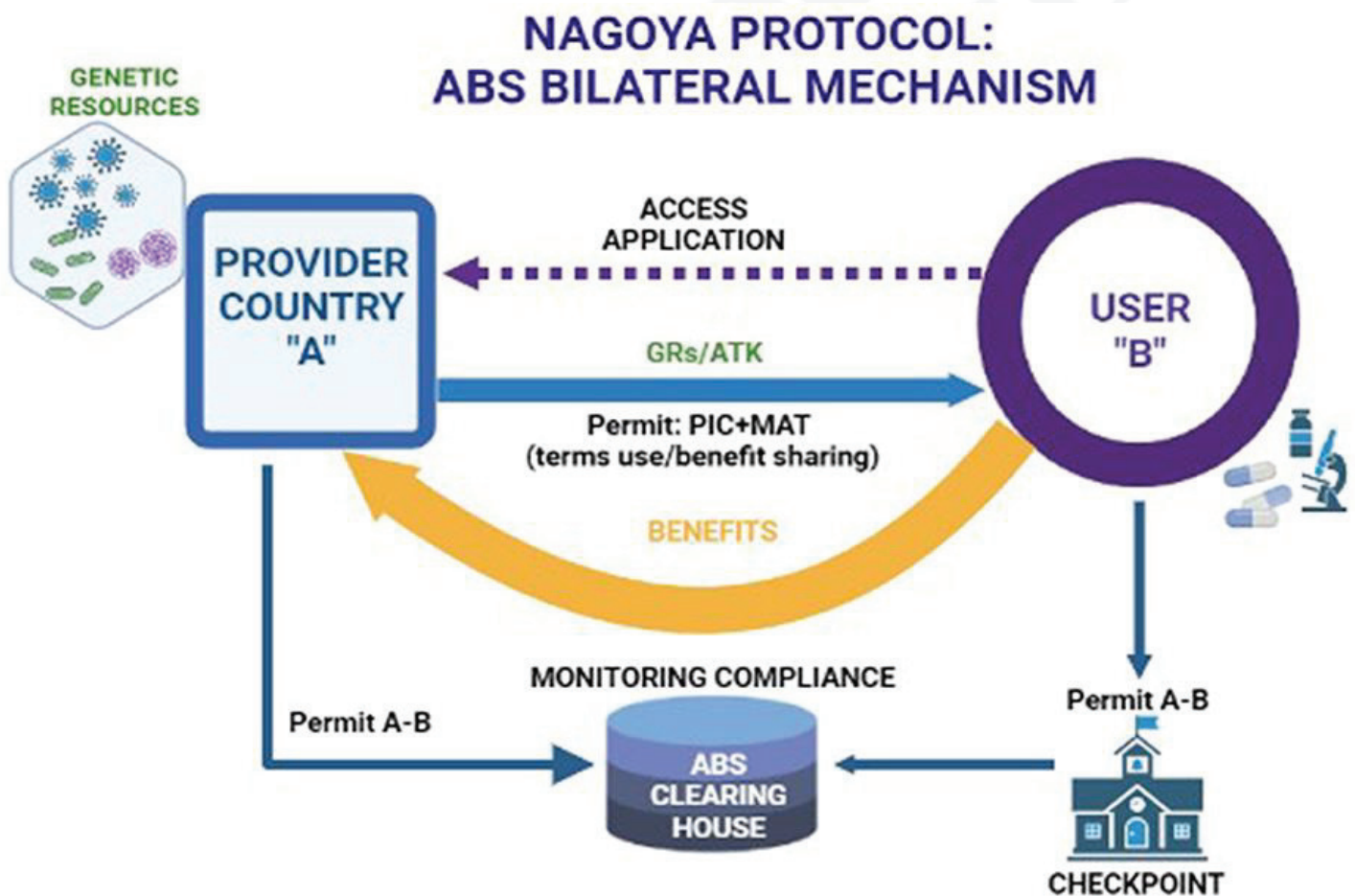
- An expert committee on invasive alien species has been set up by the National Biodiversity Authority (NBA) to address the growing ecological and socio-economic risks posed by such species across the country.
- The decision follows the National Green Tribunal's (NGT) direction to the NBA after a suo motu proceeding underscored the serious threats of foreign species to native biodiversity, key ecosystems, and agriculture, besides food security and human and wildlife health.
- This was further reinforced by an advisory from the Ministry of Environment, Forest and Climate Change (MoEFCC) to establish a dedicated expert body.
- "Accordingly, in exercise of its powers under the Biological Diversity Act, 2002 (as amended in 2023), the NBA has constituted a multi-disciplinary committee to provide strategic guidance on the issue,".
- The committee has been mandated to prepare a consolidated national list of invasive alien species based on state-wise inputs, identify and prioritise high-risk species, and recommend science-based management strategies, ecological restoration measures, and national-level guidelines for their prevention, control, and eradication.
- The committee will also document and disseminate best practices, identify critical knowledge gaps and propose research and data generation programmes to strengthen long-term management and policy responses.
- The committee will be chaired by Dhananjai Mohan, former principal chief conservator of forests (PCCF) and head of Uttarakhand forest force, with A Biju Kumar, vice-chancellor of Kerala University of Fisheries and Ocean Studies, serving as co-chair, besides senior officials and experts from key ministries and premier scientific institutions like Zoological Survey of India, Botanical Survey of India, ICAR research bureau's on plant, fish and insect genetic resources, Indian Council of Forestry Research and Education, Wildlife Institute of India, Forest Survey of India, and forest departments of Tamil Nadu, Odisha, Maharashtra, and Assam, along with international and academic experts such as IUCN forming the rest of the panel, the statement says.
- "The composition reflects a broad spectrum of expertise spanning ecology, forestry, agriculture, fisheries, marine sciences, and biodiversity conservation, ensuring a coordinated, science-driven, and whole-of-government approach to tackling invasive alien species," it added.



- The committee will function for two years and is expected to contribute to safeguarding India's biodiversity, enhancing ecosystem resilience, and supporting national and global biodiversity commitments.

## Nagoya Protocol

- The Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity, also known as the Nagoya Protocol on Access and Benefit Sharing (ABS) is a 2010 supplementary agreement to the 1992 Convention on Biological Diversity (CBD).
- Its aim is the implementation of one of the three objectives of the CBD: the fair and equitable sharing of benefits arising out of the utilization of genetic resources, thereby contributing to the conservation and sustainable use of biodiversity.
- It sets out obligations for its contracting parties to take measures in relation to access to genetic resources, benefit-sharing and compliance.
- The protocol was adopted on 29 October 2010 in Nagoya, Japan, and entered into force on 12 October 2014.
- Concerns have been expressed that the added bureaucracy and legislation could be damaging to the monitoring and collection of biodiversity, to conservation, to the international response to infectious diseases, and to research.



## Aims and scope

- The Nagoya Protocol applies to genetic resources that are covered by the CBD, and to the benefits arising from their utilization. The protocol also covers traditional knowledge associated with genetic resources that are covered by the CBD and the benefits arising from its utilization.

- Its aim is the implementation of one of the three objectives of the CBD: the fair and equitable sharing of benefits arising out of the utilization of genetic resources, thereby contributing to the conservation and sustainable use of biodiversity.

## **Adoption and ratification**

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- The protocol was adopted on 29 October 2010 in Nagoya, Japan, at the tenth meeting of the Conference of the Parties, held from 18 to 29 October 2010 and entered into force on 12 October 2014.

## **Convention on Biological Diversity**

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- The Convention on Biological Diversity (CBD), known informally as the Biodiversity Convention, is a multilateral treaty.
- The Convention has three main goals: the conservation of biological diversity (or biodiversity); the sustainable use of its components; and the fair and equitable sharing of benefits arising from genetic resources.
- Its objective is to develop national strategies for the conservation and sustainable use of biological diversity, and it is often seen as the key document regarding sustainable development.
- The Convention was opened for signature at the Earth Summit in Rio de Janeiro on 5 June 1992 and entered into force on 29 December 1993.
- The United States is the only UN member state which has not ratified the Convention.
- It has two supplementary agreements, the Cartagena Protocol and Nagoya Protocol.
- The Cartagena Protocol on Biosafety to the Convention on Biological Diversity is an international treaty governing the movements of living modified organisms (LMOs) resulting from modern biotechnology from one country to another.
- It was adopted on 29 January 2000 as a supplementary agreement to the CBD and entered into force on 11 September 2003.
- The Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization (ABS) to the Convention on Biological Diversity is another supplementary agreement to the CBD.
- It provides a transparent legal framework for the effective implementation of one of the three objectives of the CBD: the fair and equitable sharing of benefits arising out of the utilization of genetic resources.
- 2010 was also the International Year of Biodiversity, and the Secretariat of the CBD was its focal point.
- Following a recommendation of CBD signatories at Nagoya, the UN declared 2011 to 2020 as the United Nations Decade on Biodiversity in December 2010.
- The Convention's Strategic Plan for Biodiversity 2011-2020, created in 2010, include the Aichi Biodiversity Targets.
- The meetings of the Parties to the Convention are known as Conferences of the Parties (COP), with the first one (COP 1) held in Nassau, Bahamas, in 1994.
- In the area of marine and coastal biodiversity CBD's focus at present is to identify Ecologically or Biologically Significant Marine Areas (EBSAs) in specific ocean locations based on scientific criteria.
- The aim is to create an international legally binding instrument (ILBI) involving area-based planning and decision-making under UNCLOS to support the conservation and sustainable use of marine biological diversity beyond areas of national jurisdiction (BBNJ).

## **Conference of the Parties (COP)**

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- The Convention's governing body is the Conference of the Parties (COP), consisting of all governments (and regional economic integration organizations) that have ratified the treaty.

- This ultimate authority reviews progress under the Convention, identifies new priorities, and sets work plans for members.
- The COP can also make amendments to the Convention, create expert advisory bodies, review progress reports by member nations, and collaborate with other international organizations and agreements.
- The Conference of the Parties uses expertise and support from several other bodies that are established by the Convention.

## Intergovernmental Panel on Climate Change

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- The Intergovernmental Panel on Climate Change (IPCC) is an intergovernmental body of the United Nations.
- Its job is to advance scientific knowledge about climate change caused by human activities.
- The World Meteorological Organization (WMO) and the United Nations Environment Programme (UNEP) established the IPCC in 1988.
- The United Nations endorsed the creation of the IPCC later that year.
- It has a secretariat in Geneva, Switzerland, hosted by the WMO.
- It has 195 member states who govern the IPCC.
- The member states elect a bureau of scientists to serve through an assessment cycle.
- A cycle is usually six to seven years.
- The bureau selects experts to prepare IPCC reports.
- It draws the experts from nominations by governments and observer organisations.
- The IPCC has three working groups and a task force, which carry out its scientific work.
- The IPCC informs governments about the state of knowledge of climate change.
- It does this by examining all the relevant scientific literature on the subject.
- This includes the natural, economic and social impacts and risks. It also covers possible response options.
- The IPCC does not conduct its own original research. It aims to be objective and comprehensive.
- Thousands of scientists and other experts volunteer to review the publications.
- The IPCC is an internationally accepted authority on climate change. Leading climate scientists and all member governments endorse its findings.
- Media, governments, civil society organisations and businesses cite its reports.
- IPCC reports play a key role in the annual climate negotiations held by the United Nations Framework Convention on Climate Change (UNFCCC).
- The IPCC Fifth Assessment Report was an important influence on the landmark Paris Agreement in 2015.
- The IPCC shared the 2007 Nobel Peace Prize with Al Gore for contributions to the understanding of climate change.
- The first and most influential was the Special Report on Global Warming of 1.5°C in 2018.
- In 2019 the Special Report on Climate Change and Land (SRCCL), and the Special Report on the Ocean and Cryosphere in a Changing Climate (SROCC) came out.
- The IPCC also updated its methodologies in 2019.



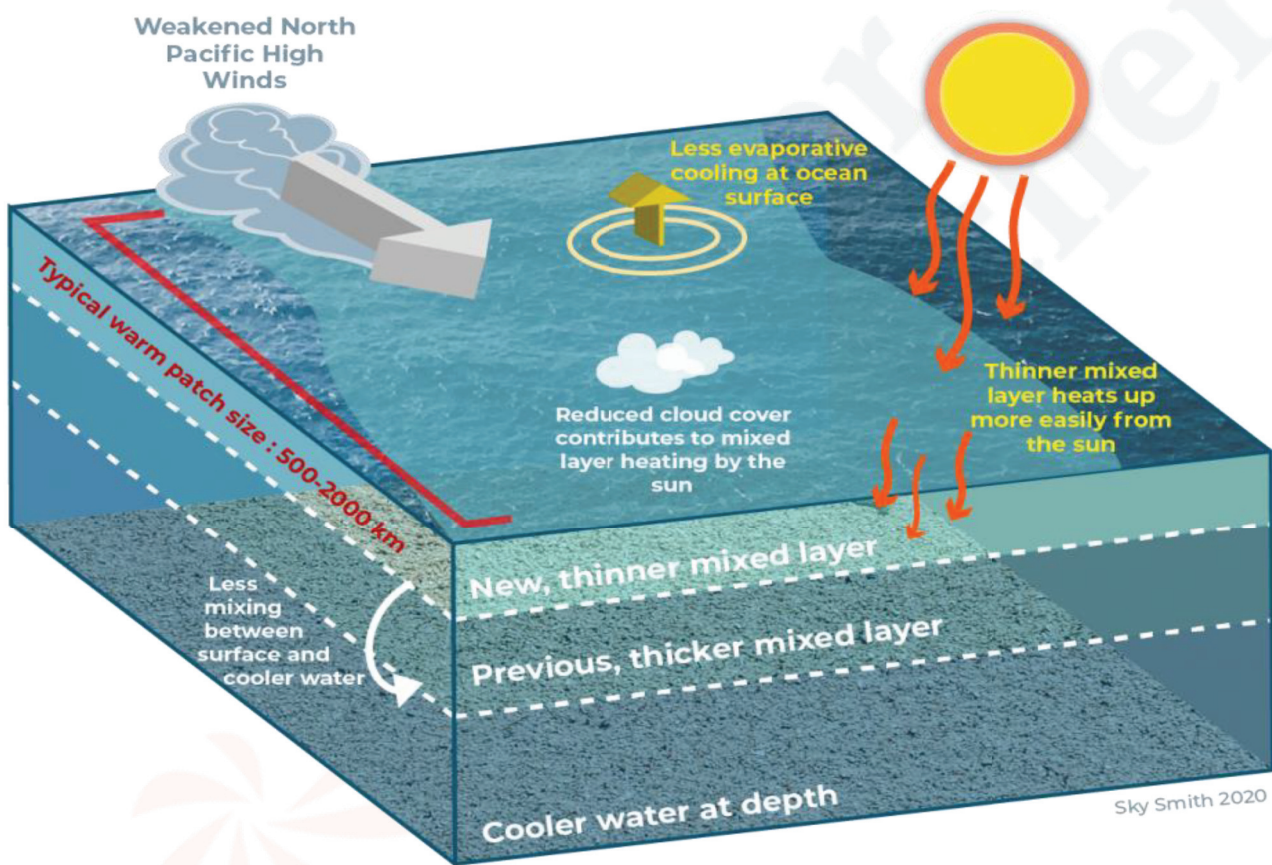
37. Consider the following statements regarding the Cartagena Protocol on Biosafety:

1. It is a supplementary agreement to the Convention on Biological Diversity.
2. It regulates transboundary movement of living modified organisms (LMOs).
3. It entered into force after the Nagoya Protocol.

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

## 7. Marine Heat Waves



- The world is currently baking under the blazing sun.
- Sweltering temperatures have induced extreme heat warnings, wildfires and poor air quality in different regions.
- But it isn't just on the land that the mercury has soared – the average daily global sea surface temperature is off the charts too.
- And since then, ocean temperatures have remained at record-high levels, giving rise to marine heat waves (MHWs) around the globe.
- At present, MHWs have gripped the north-east Pacific, the southern hemisphere in the southern Indian Ocean and the Pacific, the north-east Atlantic, tropical North Atlantic, and the Mediterranean, according to a recent forecast of the non-profit science organisation Mercator Ocean International.

- MHWs can have debilitating effects on both marine ecosystems and humans. They may cause the deaths of several marine species, alter their migration patterns, lead to coral bleaching and even impact weather patterns.
- MHWs can make storms stronger and severely affect coastal communities. What's more, these disastrous consequences are set to become even worse as the world continues to get warmer, making MHWs more intense and longer.

### What are marine heat waves?

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- A marine heat wave is an extreme weather event.
- It occurs when the surface temperature of a particular region of the sea rises to 3 or 4 degree Celsius above the average temperature for at least five days.
- MHWs can last for weeks, months or even years, according to the US government's agency National Oceanic and Atmospheric Administration (NOAA).

### What is the impact of marine heat waves on ocean life?

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- Although an increase of 3 or 4 degrees Celsius in average temperatures may not be much for humans, it can be catastrophic for marine life.
- For instance, MHWs along the Western Australian coast during the summer of 2010 and 2011 caused some "devastating" fish kills — the sudden and unexpected death of many fish or other aquatic animals over a short period and mainly within a particular area.
- A different study revealed that the same MHWs destroyed kelp forests and fundamentally altered the ecosystem of the coast.
- Kelps usually grow in cooler waters, providing habitat and food for many marine animals.
- Another example is when high ocean temperatures in the tropical Atlantic and Caribbean in 2005 led to a massive coral bleaching event.
- A 2010 study showed that more than 80 per cent of surveyed corals had bleached and over 40 per cent of the total surveyed had died. Corals are very sensitive to the temperature of the water in which they live.
- When water gets too warm, they expel the algae known as zooxanthellae, living in their tissues, causing them to turn entirely white. This is called coral bleaching.
- "When a coral bleaches, it is not dead.
- Corals can survive a bleaching event, but they are under more stress and are subject to mortality.
- Coral bleaching has severe consequences as it reduces the reproductivity of corals and makes them more vulnerable to fatal diseases.
- Not only this, thousands of marine animals depend on coral reefs for survival and damage to corals could, in turn, threaten their existence.
- MHWs also fuel the growth of invasive alien species, which can be destructive to marine food webs.
- Additionally, they force species to change their behaviour in a way that puts wildlife at increased risk of harm — MHWs have been linked to whale entanglements in fishing gear, according to a report by the International Union for Conservation of Nature (IUCN).

### How do marine heat waves affect humans?

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- Higher ocean temperatures, which are associated with MHWs, can make storms like hurricanes and tropical cyclones stronger.
- With warmer temperatures, the rate of evaporation escalates and so does the transfer of heat from the oceans to the air.
- When storms travel across hot oceans, they gather more water vapour and heat.

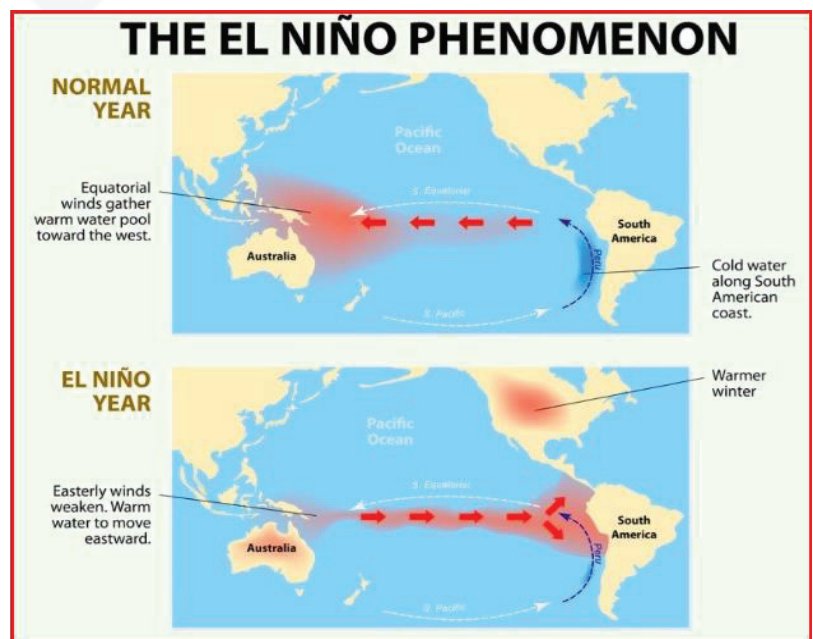
- This results in more powerful winds, heavier rainfall and more flooding when storms reach the land — meaning heightened devastation for humans.
- Moreover, only marine wildlife isn't dependent on coral reefs. According to NOAA, half a billion people depend on reefs for food, income, and protection.
- So when MHWs destroy these reefs, humans relying on them also bear the brunt.
- The IUCN report pointed out that MHWs have “profound socio-economic impacts for coastal communities.”
- For example, in 2012, an MHW over the northwest Atlantic Ocean caused marine species that like warm water to move northwards and migrate earlier than they usually did, affecting fisheries targeting those species in the United States.
- All of these disastrous consequences are set to become even worse as the world continues to get warmer, making MHWs more intense and longer.

### How is global warming affecting marine heat waves and oceans?

- A 2018 study, ‘Marine heatwaves under global warming’, published in the journal Nature, showed that with the soaring global temperatures, MHWs have become longer-lasting, more frequent and intense in the past few decades.
- “Between 1982 and 2016, we detect a doubling in the number of MHW days, and this number is projected to further increase on average by a factor of 16 for global warming of 1.5 degrees Celsius relative to preindustrial levels and by a factor of 23 for global warming of 2.0 degrees Celsius,” the study said.
- More significantly, it stated that 87 per cent of MHWs are attributable to human-induced warming.
- Research suggests that the oceans have absorbed 90 per cent of the additional heat caused by the release of greenhouse gases into the atmosphere from burning fossil fuels and deforestation in recent decades.
- This has increased the global mean sea surface temperature by close to 0.9 degree Celsius since 1850 and the increase over the last four decades is around 0.6 degree Celsius, according to Copernicus Climate Change Service.
- Therefore, as global air temperatures increase, so will ocean temperatures, leading to more MHWs.
- To make matters worse, El Nino — a weather pattern that refers to an abnormal warming of surface waters in the equatorial Pacific Ocean — conditions have set in for the first time in seven years.
- Scientists and experts suggest that El Nino will trigger extreme heat and increase the likelihood of breaking more temperature records in different regions of the world.

### El Niño

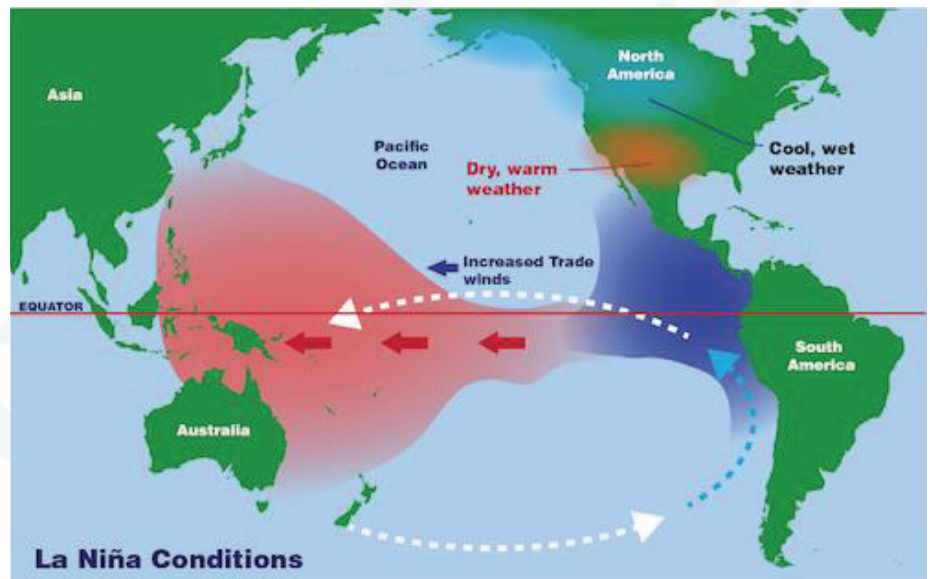
- During El Niño, trade winds weaken.
- Warm water is pushed back east, toward the west coast of the Americas.
- El Niño means Little Boy in Spanish. South American fishermen first noticed periods of unusually warm water in the Pacific Ocean in the 1600s.



- The full name they used was El Niño de Navidad, because El Niño typically peaks around December.
- El Niño can affect our weather significantly.
- The warmer waters cause the Pacific jet stream to move south of its neutral position.
- With this shift, areas in the northern U.S. and Canada are dryer and warmer than usual. But in the U.S. Gulf Coast and Southeast, these periods are wetter than usual and have increased flooding.
- El Niño also has a strong effect on marine life off the Pacific coast. During normal conditions, upwelling brings water from the depths to the surface; this water is cold and nutrient rich.
- During El Niño, upwelling weakens or stops altogether.
- Without the nutrients from the deep, there are fewer phytoplankton off the coast.
- This affects fish that eat phytoplankton and, in turn, affects everything that eats fish.
- The warmer waters can also bring tropical species, like yellowtail and albacore tuna, into areas that are normally too cold.

## La Niña

- La Niña means Little Girl in Spanish. La Niña is also sometimes called El Viejo, anti-El Niño, or simply “a cold event.”
- La Niña has the opposite effect of El Niño. During La Niña events, trade winds are even stronger than usual, pushing more warm water toward Asia.
- Off the west coast of the Americas, upwelling increases, bringing cold, nutrient-rich water to the surface.
- These cold waters in the Pacific push the jet stream northward.
- This tends to lead to drought in the southern U.S. and heavy rains and flooding in the Pacific Northwest and Canada.
- During a La Niña year, winter temperatures are warmer than normal in the South and cooler than normal in the North.
- La Niña can also lead to a more severe hurricane season.
- During La Niña, waters off the Pacific coast are colder and contain more nutrients than usual.
- This environment supports more marine life and attracts more cold-water species, like squid and salmon, to places like the California coast.



## Ocean Current

- An ocean current is a continuous, directed movement of seawater generated by a number of forces acting upon the water, including wind, the Coriolis effect, breaking waves, cabbeling, and temperature and salinity differences.
- Depth contours, shoreline configurations, and interactions with other currents influence a current's direction and strength.

- Ocean currents are primarily horizontal water movements.
- An ocean current flows for great distances and together they create the global conveyor belt, which plays a dominant role in determining the climate of many of Earth's regions.
- More specifically, ocean currents influence the temperature of the regions through which they travel.
- For example, warm currents traveling along more temperate coasts increase the temperature of the area by warming the sea breezes that blow over them. Perhaps the most striking example is the Gulf Stream, which makes northwest Europe much more temperate for its high latitude than other areas at the same latitude.
- Another example is Lima, Peru, whose cooler subtropical climate contrasts with that of its surrounding tropical latitudes because of the Humboldt Current. Ocean currents are patterns of water movement that influence climate zones and weather patterns around the world.
- They are primarily driven by winds and by seawater density, although many other factors – including the shape and configuration of the ocean basin they flow through – influence them.
- The two basic types of currents – surface and deep-water currents – help define the character and flow of ocean waters across the planet.

### Causes of Ocean Current

- Ocean dynamics define and describe the motion of water within the oceans.
- Ocean temperature and motion fields can be separated into three distinct layers: mixed (surface) layer, upper ocean (above the thermocline), and deep ocean.
- Ocean currents are measured in units of sverdrup (sv), where 1 sv is equivalent to a volume flow rate of 1,000,000 m<sup>3</sup> (35,000,000 cu ft) per second.
- Surface ocean currents (in contrast to subsurface ocean currents), make up only 8% of all water in the ocean, are generally restricted to the upper 400 m (1,300 ft) of ocean water, and are separated from lower regions by varying temperatures and salinity which affect the density of the water, which in turn, defines each oceanic region.
- Because the movement of deep water in ocean basins is caused by density-driven forces and gravity, deep waters sink into deep ocean basins at high latitudes where the temperatures are cold enough to cause the density to increase.
- Surface currents are measured in units of meters per second (m/s) or in knots.

### Wind-driven circulation

- Surface oceanic currents are driven by wind currents, the large scale prevailing winds drive major persistent ocean currents, and seasonal or occasional winds drive currents of similar persistence to the winds that drive them, and the Coriolis Effect plays a major role in their development.
- The Ekman spiral velocity distribution results in the currents flowing at an angle to the driving winds, and they develop typical clockwise spirals in the northern hemisphere and counter-clockwise rotation in the southern hemisphere.
- In addition, the areas of surface ocean currents move somewhat with the seasons; this is most notable in equatorial currents.
- Deep ocean basins generally have a non-symmetric surface current, in that the eastern equator-ward flowing branch is broad and diffuse whereas the pole-ward flowing western boundary current is relatively narrow.

### Thermohaline circulation

- Deep ocean currents are driven by density and temperature gradients.

- This thermohaline circulation is also known as the ocean's conveyor belt.
- These currents, sometimes called submarine rivers, flow deep below the surface of the ocean and are hidden from immediate detection.
- Where significant vertical movement of ocean currents is observed, this is known as upwelling and downwelling.
- An international program called Argo began researching deep ocean currents with a fleet of underwater robots in the 2000s.
- The thermohaline circulation is a part of the large-scale ocean circulation that is driven by global density gradients created by surface heat and freshwater fluxes.
- The adjective thermohaline derives from thermo- referring to temperature and -haline referring to salt content, factors which together determine the density of sea water.
- Wind-driven surface currents (such as the Gulf Stream) travel polewards from the equatorial Atlantic Ocean, cooling en route, and eventually sinking at high latitudes (forming North Atlantic Deep Water).
- This dense water then flows into the ocean basins. While the bulk of it upwells in the Southern Ocean, the oldest waters (with a transit time of around 1000 years) upwell in the North Pacific.
- Extensive mixing therefore takes place between the ocean basins, reducing differences between them and making the Earth's oceans a global system. On their journey, the water masses transport both energy (in the form of heat) and matter (solids, dissolved substances and gases) around the globe.
- As such, the state of the circulation has a large impact on the climate of the Earth.
- The thermohaline circulation is sometimes called the ocean conveyor belt, the great ocean conveyor, or the global conveyor belt.
- On occasion, it is imprecisely used to refer to the meridional overturning circulation, (MOC).

## QUESTIONS

**38.** Consider the following statements regarding Marine Heat Waves (MHWs):

1. A marine heat wave occurs when sea surface temperature rises by at least 3–4°C above average for five consecutive days.
2. Marine heat waves can last only for a few days and cannot persist beyond a week.
3. Marine heat waves can influence weather patterns and intensify storms.

Which of the statements given above are correct?

- |                 |                 |
|-----------------|-----------------|
| A. 1 and 3 only | C. 2 and 3 only |
| B. 1 only       | D. 1, 2 and 3   |

**39.** Consider the following statements about the impact of Marine Heat Waves:

1. They can cause coral bleaching by forcing corals to expel symbiotic algae.
2. They promote the growth of invasive alien species in marine ecosystems.
3. They have no significant effect on fisheries and coastal livelihoods.

Which of the statements given above are correct?

- |                 |                 |
|-----------------|-----------------|
| A. 1 and 2 only | C. 1 and 3 only |
| B. 2 and 3 only | D. 1, 2 and 3   |



## ANSWER KEY AND EXPLANATION

### 1. A 1 and 3 only

- **Statement 1 is correct:** As clarified in *Chinthada Anand v. State of Andhra Pradesh (2026)*, conversion to religions like Christianity or Islam leads to an immediate and complete loss of SC status.
- **Statement 2 is incorrect:** Reconversion does not automatically restore SC status. The individual must provide strict proof—such as genuine renunciation, adoption of original caste practices, and acceptance by the caste community.
- **Statement 3 is correct:** Clause 3 of the Constitution (Scheduled Castes) Order, 1950 restricts SC status to those professing Hinduism, Sikhism, or Buddhism.

### 2. A 1 and 2 only

- **Statement 1 is correct:** Under Article 341, the President specifies which castes are to be recognized as Scheduled Castes.
- **Statement 2 is correct:** Once notified, only Parliament can include or exclude communities from the SC list.
- **Statement 3 is incorrect:** SC status is **state-specific**. A caste recognized as SC in one state may not be recognized in another.

### 3. A 2 and 3 only

- **Statement 1 is incorrect:** Unlike SCs, conversion does not automatically lead to loss of ST status.
- **Statement 2 is correct:** The Constitution (Scheduled Tribes) Order, 1950 does not impose religion-based restrictions on ST status.
- **Statement 3 is correct:** Courts have clarified that ST status can continue after conversion if tribal identity, customs, and community acceptance persist.

### 4. A 1 and 3 only

- **Statement 1 is correct:** Article 17 abolishes untouchability and prohibits its practice in any form.
- **Statement 2 is incorrect:** Article 46 is a Directive Principle of State Policy (DPSP), not a Fundamental Right. It guides the State to promote the interests of weaker sections.
- **Statement 3 is correct:** Article 15(4) allows the State to make special provisions for the advancement of socially and educationally backward classes, including SCs and STs.

### 5. A 1 and 2 only

- **Statement 1 is correct:** Article 330 provides for reservation in the Lok Sabha.
- **Statement 2 is correct:** Article 332 provides for reservation in State Legislative Assemblies.
- **Statement 3 is incorrect:** Article 243D relates to Panchayats, not Municipalities. Reservation in Municipalities is provided under Article 243T.

### 6. D 1, 2 and 3

- **Statement 1 is correct:** Article 338 provides for the National Commission for Scheduled Castes (NCSC).
- **Statement 2 is correct:** Article 340 empowers the President to appoint a commission (e.g., Mandal Commission) to examine backward classes.
- **Statement 3 is correct:** The NCSC has powers of a civil court while investigating complaints and safeguards.

### 7. A 1 and 3 only

- **Statement 1 is correct:** Under Article 341(1), the President specifies Scheduled Castes for a State/UT in consultation with the Governor.
- **Statement 2 is incorrect:** SC status is **state-specific**. A caste recognized as SC in one State may not be recognized in another due to differences in social and economic conditions.
- **Statement 3 is correct:** After the initial notification, only Parliament has the authority (Article 341(2)) to include or exclude castes from the SC list.

### 8. C 1, 2 and 3 only

- **Statement 1 is correct:** Under Article 15(4) and Article 15(5), the State can make special provisions for SCs and STs in Government educational institutions.
- **Statement 2 is correct:** Article 15(5) explicitly allows the State to provide reservation in **private aided institutions**.
- **Statement 3 is correct:** Article 15(5) further extends this power to **private unaided institutions** as well.
- **Statement 4 is incorrect:** Article 15(5) clearly **excludes minority educational institutions** (protected under Article 30). These institutions have the right to manage their affairs and are not subject to such reservation provisions.

### 9. A 2 and 3 only

- **Statement 1 is incorrect:** The NCSC is a constitutional body, not a statutory body.
- **Statement 2 is correct:** It was created after the 89<sup>th</sup> Constitutional Amendment Act, 2003, which separated SC and ST commissions.
- **Statement 3 is correct:** It is provided under Article 338 of the Constitution.

### 10. A 1 and 3 only

- **Statement 1 is correct:** The NCSC has five members in total.
- **Statement 2 is incorrect:** Members are appointed by the President, not elected by Parliament.
- **Statement 3 is correct:** Their tenure and service conditions are determined by the President.

### 11. A 1 and 2 only

- **Statement 1 is correct:** NCSC has powers of a civil court (summoning, evidence, etc.).
- **Statement 2 is correct:** Governments are required to consult the Commission on major policy matters affecting SCs.
- **Statement 3 is incorrect:** Its recommendations are advisory, not binding.

### 12. B 2 only

- **Statement 1 is incorrect:** The IFD is a plurilateral agreement, not multilateral; it binds only those WTO members who voluntarily join.
- **Statement 2 is correct:** Its primary objective is to streamline procedures and make investment easier.
- **Statement 3 is incorrect:** The agreement explicitly excludes sensitive issues like market access and ISDS.

### 13. A 1 and 3 only

- **Statement 1 is correct:** India argues that investment facilitation is a non-trade issue beyond WTO's mandate.
- **Statement 2 is incorrect:** India opposes the plurilateral route as it undermines consensus-based multilateralism.
- **Statement 3 is correct:** India is concerned about loss of sovereign policy space over FDI regulation.

### 14. C 1, 2 and 3

- **Statement 1 is correct:** A large number of IFD supporters overlap with BRI participants.
- **Statement 2 is correct:** Harmonised investment rules may benefit China's global infrastructure and investment footprint.
- **Statement 3 is correct:** India is using its opposition tactically to push for long-pending issues like food security under the Doha agenda.

### 15. C World Trade Organization

- The correct answer is the **World Trade Organization (WTO)** because all three terms are integral components of its framework governing global trade, especially in agriculture. **Peace Clause:** A temporary provision under the Agreement on Agriculture. It protects developing countries like India from legal challenges at the WTO for **subsidies related to food security programmes**, such as MSP-based procurement. Particularly relevant to **public stockholding for food security** (e.g., food grain procurement and distribution schemes). It prevents disputes even if subsidy limits are technically breached, subject to conditions.

### 16. A World Trade Organization affairs

- The correct answer is the **World Trade Organization (WTO)**, as these "box" categories are part of the **Agreement on Agriculture (AoA)** framework. The WTO classifies agricultural subsidies into three categories based on their **impact on trade distortion**: 1. Amber Box (Trade-distorting subsidy: These subsidies **directly affect production and trade**, giving an unfair advantage. Examples: price support, input subsidies tied to production. These are **subject to reduction commitments**. Allowed only up to a **de minimis limit**: 5% of agricultural production (developed countries) and 10% (developing countries like India). 2. Blue Box (Production-limiting subsidies): These are subsidies given **with conditions to limit production**. Example: payments to farmers for reducing acreage. Considered **less trade-distorting than amber box**. **No strict limits** under WTO rules. Green Box (Non-trade-distorting subsidies): These have **minimal or no impact on trade**. Examples: environmental protection, research, disaster relief, food security programmes. **Fully permitted without limits**. Important for developing countries to support agriculture sustainably.

### 17. A 1 and 2 only

- **Statement 1 is correct:**  
India ratified the **Trade Facilitation Agreement (TFA)** in **2016**, thereby committing to its provisions on easing trade procedures.
- **Statement 2 is correct:**  
The TFA was finalized during the **2013 Bali Ministerial Conference**, making it a key component of the **Bali Package**, which aimed to boost global trade, especially for developing countries.

- **Statement 3 is incorrect:**

The TFA did **not** come into force in January 2016.

It officially came into force on **22 February 2017**, after the required number of WTO members ratified it.

#### 18. A 2 and 3 only

- **Statement 1 is incorrect:** LPG consists mainly of propane and butane, while LNG is primarily methane.
- **Statement 2 is correct:** LPG is liquefied by pressure; LNG is liquefied by extreme cooling (cryogenic process).
- **Statement 3 is correct:** LNG reduces volume by about 600 times, making transport efficient.

#### 19. A 1 and 2 only

- **Statement 1 is correct:** LPG is denser than air and can accumulate, increasing fire risk.
- **Statement 2 is correct:** LNG vapor (methane) is lighter than air and disperses quickly.
- **Statement 3 is incorrect:** LPG is generally riskier in leaks because it accumulates; LNG is relatively safer.

#### 20. A 1 and 2 only

- **Statement 1 is correct:** LPG is widely used in households and industries.
- **Statement 2 is correct:** LNG is mainly used for transport and power generation after regasification.
- **Statement 3 is incorrect:** LNG is not distributed via cylinders; LPG is used in cylinders for domestic supply.

#### 21. A 1 and 3 only

- **Statement 1 is correct:** Around 90% of LPG imports pass through the Strait of Hormuz.
- **Statement 2 is incorrect:** India imports ~60% LPG but ~50% LNG, so LPG import dependence is higher.
- **Statement 3 is correct:** LPG is more severely affected (~54% supply disruption vs ~30% for LNG).

#### 22. A 1 and 3 only

- **Statement 1 is correct:** LPG is stored in cylinders and used widely for cooking.
- **Statement 2 is incorrect:** LNG is first converted back to gas (regasified) before being supplied via pipelines.
- **Statement 3 is correct:** PNG is essentially natural gas (often from LNG) supplied after regasification.

#### 23. B 2 and 3 only

- **Statement 1 is incorrect:** UBI is **universal**, not targeted. It is given to all individuals regardless of income or status.
- **Statement 2 is correct:** A defining feature of UBI is that it is **individual-based and unconditional**.
- **Statement 3 is correct:** One major argument in favour of UBI is that it can **replace fragmented welfare schemes**, reducing inefficiencies and leakages.

**24. A 1 and 3 only**

- **Statement 1 is correct:** UBI can provide income support, enabling **surplus agricultural labour** to move to more productive sectors.
- **Statement 2 is incorrect:** UBI is designed to **reduce bureaucracy**, not increase it, since it eliminates targeting and middlemen.
- **Statement 3 is correct:** By increasing disposable income, UBI can **boost consumption demand**, which supports economic growth.

**25. A 1 and 3 only**

- **Statement 1 is correct:** With more income, individuals can **afford better food and nutrition**, helping address hunger and malnutrition.
- **Statement 2 is incorrect:** UBI provides income support but does **not directly fix structural issues** like poor healthcare or infrastructure.
- **Statement 3 is correct:** UBI can give **direct financial autonomy**, especially to women and marginalized groups, improving their socio-economic position.

**26. A 1 and 2 only**

- **Question Explanation:** This question tests the purpose and implications of base year revision.
- **Detailed Explanation for the Correct Answer:**
  - Statement 1 is correct because rebasing reflects structural economic changes like sectoral shifts.
  - Statement 2 is correct as it incorporates new datasets (e.g., GST, PFMS) and improves methodology.
- **Explanation for Incorrect Options:**
  - Statement 3 is incorrect because GDP continues to be estimated using production, income, and expenditure approaches; the framework does not shift exclusively to one method.

**27. A 1 and 3 only**

- **Question Explanation:** This question checks factual clarity about GDP rebasing and rationale.
- **Detailed Explanation for the Correct Answer:**
  - Statement 1 is correct as GDP base year is updated to 2022–23.
  - Statement 3 is correct since new sectors and economic transformations are incorporated.
- **Explanation for Incorrect Options:**
  - Statement 2 is incorrect because 2022–23 was chosen as a “normal” year after pandemic disruptions, not because of distortions.

**28. A 1 and 2 only**

- **Question Explanation:** This question tests understanding of CPI revision methodology.
- **Detailed Explanation for the Correct Answer:**
  - Statement 1 is correct as CPI base year is updated to 2024.
  - Statement 2 is correct since HCES 2023–24 is used to revise weights and basket.
- **Explanation for Incorrect Options:**
  - Statement 3 is incorrect because CPI includes both rural and urban consumption patterns.

**29. A 2 and 3 only**

- **Question Explanation:** This question evaluates conceptual understanding of IIP.
- **Detailed Explanation for the Correct Answer:**
  - Statement 2 is correct as IIP contributes to GVA estimation.
  - Statement 3 is correct because alignment ensures consistency across macro indicators.
- **Explanation for Incorrect Options:**
  - Statement 1 is incorrect because IIP is a monthly indicator, not quarterly.

**30. A 2 and 3 only**

- **Statement 1 is incorrect:** The Global North–South divide is **not geographical**; many Global South countries lie in the Northern Hemisphere.
- **Statement 2 is correct:** The term was first used in **1967 by Carl Oglesby**.
- **Statement 3 is correct:** Global South countries are typically **developing, less industrialised, and dependent on primary exports**.

**31. B 1 and 3 only**

- **Statement 1 is correct:** The divide originated from **colonialism and unequal development patterns**.
- **Statement 2 is incorrect:** The hierarchy **persisted even after WWII**, despite decolonisation.
- **Statement 3 is correct:** Global institutions like **IMF and World Bank often reflect power imbalances**, reinforcing the divide.

**32. A 1 and 3 only**

- **Statement 1 is correct:** The G20 was founded in **1999 after global financial crises**, including the Asian Financial Crisis.
- **Statement 2 is incorrect:** The G20 includes **both developed and developing countries** (e.g., India, China, Brazil).
- **Statement 3 is correct:** In **2009**, the G20 declared itself the **primary forum for global economic cooperation**.

**33. A 1 and 2 only**

- **Statement 1 is correct:** The committee is constituted under the **Biological Diversity Act, 2002 (amended 2023)**.
- **Statement 2 is correct:** Its mandate includes **listing invasive species and recommending management strategies**.
- **Statement 3 is incorrect:** The move followed **NGT directions and MoEFCC advisory**, not purely voluntary action.

**34. A 1 and 2 only**

- **Statement 1 is correct:** Nagoya Protocol is a **supplementary agreement to CBD**.
- **Statement 2 is correct:** It focuses on **Access and Benefit Sharing (ABS)** of genetic resources.
- **Statement 3 is incorrect:** CBD came into force in **1993**, while Nagoya Protocol came later in **2014**.

**35. A 1 and 2 only**

- **Statement 1 is correct:** CBD was signed at the **1992 Rio Earth Summit**.
- **Statement 2 is correct:** Its three pillars are **conservation, sustainable use, and benefit sharing**.
- **Statement 3 is incorrect:** The **United States has not ratified** the CBD.

**36. A 1 and 3 only**

- **Statement 1 is correct:** IPCC was set up by **WMO and UNEP in 1988**.
- **Statement 2 is incorrect:** IPCC **does not conduct original research**; it assesses existing literature.
- **Statement 3 is correct:** IPCC reports influenced the **Paris Agreement (2015)**.

**37. A 1 and 2 only**

- **Statement 1 is correct:** Cartagena Protocol is a **supplementary agreement to CBD**.
- **Statement 2 is correct:** It governs **movement of LMOs across borders**.
- **Statement 3 is incorrect:** Cartagena Protocol came into force in **2003**, earlier than the Nagoya Protocol (2014).

**38. A 1 and 3 only**

- **Question Explanation:** This question tests your understanding of the definition, duration, and impacts of marine heat waves.
- **Detailed Explanation for the Correct Answer:**
  - Statement 1 is correct because MHWs are defined as a rise of about 3–4°C above average for at least five days.
  - Statement 3 is correct since warmer oceans increase evaporation and heat transfer, strengthening storms and influencing weather systems.
- **Explanation for Incorrect Options:**
  - Statement 2 is incorrect because MHWs can last weeks, months, or even years, making them prolonged extreme events.

**39. A 1 and 2 only**

- **Question Explanation:** This question evaluates ecological and socio-economic impacts of MHWs.
- **Detailed Explanation for the Correct Answer:**
  - Statement 1 is correct as coral bleaching occurs when heat stress forces corals to expel zooxanthellae.
  - Statement 2 is correct because warmer waters favor invasive species, disrupting marine food webs.
- **Explanation for Incorrect Options:**
  - Statement 3 is incorrect because fisheries and coastal communities are significantly affected due to species migration, stock decline, and habitat loss.

**40. A 1 and 3 only**

- **Question Explanation:** This question checks conceptual clarity on El Niño mechanisms.

- **Detailed Explanation for the Correct Answer:**
  - Statement 1 is correct because trade winds weaken during El Niño.
  - Statement 3 is correct since El Niño significantly shifts jet streams and global weather.
- **Explanation for Incorrect Options:**
  - Statement 2 is incorrect because El Niño weakens or suppresses upwelling, reducing nutrient supply and marine productivity.

**41. A 1 and 2 only**

- **Question Explanation:** This question tests understanding of La Niña's oceanographic effects.
- **Detailed Explanation for the Correct Answer:**
  - Statement 1 is correct because stronger trade winds push warm water westward.
  - Statement 2 is correct as stronger upwelling brings cold, nutrient-rich water to the surface.
- **Explanation for Incorrect Options:**
  - Statement 3 is incorrect because increased nutrients actually enhance marine productivity, supporting more marine life.

**42. A 1 and 2 only**

- **Question Explanation:** This question evaluates understanding of types and drivers of ocean currents.
- **Detailed Explanation for the Correct Answer:**
  - Statement 1 is correct because surface currents depend on winds and Coriolis force.
  - Statement 2 is correct as deep currents are driven by thermohaline circulation (density differences due to temperature and salinity).
- **Explanation for Incorrect Options:**
  - Statement 3 is incorrect because ocean currents significantly influence climate—for example, warm currents raise coastal temperatures while cold currents cool them.