

# THE PALA CIVIL TIMES

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GLANCE



## P3. NATIONAL



**ICentre notifies rules mandating IST as common time reference** : India moves towards a unified, indigenous timekeeping system

## P4. WORLD



A Himalayan ice-rock collapse shows how cascading cryospheric hazards can trigger devastating floods far downstream.

## P11. ECONOMICS



From domestic payment innovation to a global digital public infrastructure success story, UPI is reshaping payments and India's digital diplomacy.

## Can jurists be appointed as Supreme Court Judges?

Supreme Court Judge Justice Ujjal Bhuyan questioned why the constitutional provision allowing a “distinguished jurist” to be appointed as a Supreme Court Judge has remained unused for over 76 years.



### Constitutional Provision — Article 124(3)

A person is eligible for appointment as a Supreme Court Judge if they:

- have been a High Court Judge for at least 5 years; or
- have been an advocate of a High Court for at least 10 years; or
- are, in the President’s opinion, a “distinguished jurist”.

The Constitution does not define “distinguished jurist” or prescribe minimum experience for this category, indicating that the framers intended to provide a broader route to the Supreme Court beyond judges and practising advocates.

### Constituent Assembly Intent

The Constituent Assembly debates reflect that the “distinguished jurist” category was added to bring diversity in professional backgrounds among those appointed to the Bench of the Supreme Court.

**Wider Choice:** H.V. Kamath argued that the provision would widen the field of choice by including persons with outstanding legal and juristic learning, beyond judges and advocates.

**Academic Expertise:** M. Ananthasayanam Ayyangar cited Felix Frankfurter, a Harvard Law professor who became a U.S. Supreme Court Justice, to demonstrate the value of academic expertise.

### Why Remained Unused?

**Judicial Dominance:** Supreme Court appointments have overwhelmingly come from the High Court judiciary, with only 11 advocates directly elevated from the Bar.

**Practical Experience:** Legal academics may lack sufficient courtroom and procedural experience for judicial functions.

**Practice Restrictions:** Full-time law teachers generally cannot practise as advocates, limiting their continuing courtroom exposure.

**Rule 49:** Under the Bar Council of India Rules, advocates taking full-time salaried employment must cease legal practice during such employment.

### Significance

**Specialised Expertise:** Legal academics can bring deep subject-matter knowledge, research experience and comparative legal perspectives to complex areas of law.

**Jurisprudential Contribution:** Academic scholarship can influence judicial reasoning and the development of law. Shamnad Basheer, for instance, contributed to *Novartis AG v. Union of India* (2013) on patent law, while Upendra Baxi significantly shaped discourse on public interest litigation.

**Professional Diversity:** Inclusion of jurists from academia could broaden the professional backgrounds represented on the Supreme Court, complementing the experience of judges and practising advocates.

**Law in Practice:** Greater courtroom exposure for legal academics could help bridge the gap between “law in books” and “law in action”, making academic expertise more relevant to judicial work.

The issue raises a broader question of how to balance judicial experience with intellectual and professional diversity while making the constitutionally recognised “distinguished jurist” route practically viable.



### PYQ Compass

- Q. In India, separation of judiciary from the executive is enjoined by (2020)
- (a) the Preamble of the Constitution
  - (b) a Directive Principle of State Policy
  - (c) the Seventh Schedule
  - (d) the conventional practice

## Centre notifies rules mandating IST as common time reference

The Union Government notified the Legal Metrology (Indian Standard Time) Rules, 2026 on August 27, making Indian Standard Time (IST) the single reference time for legal, administrative, commercial and official purposes across India. The Rules will come into force 180 days after Gazette publication.

### Key Provisions

**Single Time Standard:** IST will serve as the common reference for official, legal, commercial and administrative activities across the country.

**Digital Synchronisation:** Uniform time-stamping will support banking, digital payments, telecommunications, transport, power systems and digital governance.

**Indian Timing Sources:** The framework seeks to reduce dependence on foreign satellite-based time sources by promoting Indian systems for IST dissemination.

**NavIC Integration:** NavIC, India's indigenous satellite navigation system, can be used along with other approved Indian timing sources for secure time dissemination.

**Transition Period:** The 180-day period allows government departments, businesses and institutions to upgrade systems and align existing infrastructure.

### One Nation, One Time

The initiative seeks to establish a secure and synchronised national time infrastructure for technology-dependent systems. In July 2026, the government commissioned a White Rabbit Technology-based IST Dissemination Demonstration Network at RRSL Bengaluru.

A demonstration involving CSIR-NPL, ISRO, SEBI, NSE and BSNL successfully transmitted IST between Bengaluru and NSE Chennai, showcasing applications across banking, telecommunications, power, transport and digital governance.

IST is the time observed throughout India and Sri Lanka. It is calculated based on the 82°30'E longitude, passes near Mirzapur in Uttar Pradesh. This central meridian was chosen to maintain uniformity in time across India.

### LONGITUDE AND TIME

- As Earth rotates from west to east, making the Sun appear to rise in the east (360°) in 24 hours.
  - This equates to Sun appearing to 16° in 24 hours ( $360^\circ \div 24 = 15^\circ$ )
  - Frequency, every 1° of longitude corresponds to 4 minutes of time.
- Important Points to Remember.
- As you move east, local time increases
  - As you move west, local time decreases.
  - To avoid confusion, especially in large countries, a central longitude is selected to represent entire country's

### LOCAL TIME

Local time is the time at particular place, calculated based on the position of the Sun over a specific longitude.

**Time Difference (in minutes) = Longitude Difference  $\times$  4**

Q: What will be the local time at a place located at 90°E, when the time at Greenwich (0°) is 12:00 noon?

Answer: (Longitude difference, 90°)

### Significance

**Digital Reliability:** Accurate synchronisation improves the integrity of financial transactions, digital payments and computer networks.

**Critical Infrastructure:** Precise time coordination supports railways, airports, telecom networks and electricity grids.

**Strategic Autonomy:** Greater reliance on Indian timing infrastructure and NavIC reduces dependence on foreign satellite-based timing sources.

**Legal Certainty:** A common reference time ensures consistent time-stamping of legal, administrative and commercial records.



### PYQ Compass

Q. Consider the following countries :

I. United Kingdom

II. Denmark

III. New Zealand

IV. Australia

V. Brazil

How many of the above countries have more than four time zones?

- All the five
- Only four
- Only three
- Only two

## Safe Houses for Honour Killing Victims in Tamil Nadu

**Government Initiative:** Tamil Nadu will establish a safe house in every district to protect individuals and families vulnerable to honour/caste killings and related violence.

**Legal Basis:** The move follows the Supreme Court's directions in *Shakti Vahini v. Union of India* and representations from survivors and activists.

**Purpose:** Safe houses will provide security, shelter and support to couples, particularly those facing threats after inter-caste marriages, enabling them to pursue legal remedies safely.

**Existing Mechanism:** Tamil Nadu had introduced special cells and a 24-hour helpline in 2018 for complaints involving threats or harassment of inter-caste couples, but activists have raised concerns about their implementation.

**Key Concern:** Safe houses should function as protection centres rather than mediation spaces to pressure couples to end their marriages, with effective monitoring and accountability.



### PYQ Compass

Q. Intercaste marriages between castes which have socio-economic parity have increased, to some extent, but this is less true of interreligious marriages. Discuss. (GS II - 2024)

## Umar Khalid and Sharjeel Imam are 'masterminds', detention justified, Delhi Police tells HC in bail pleas in 2020 riots larger conspiracy case

The Delhi Police has opposed the bail pleas of Umar Khalid and Sharjeel Imam in the 2020 Delhi riots larger-conspiracy case, arguing that the Supreme Court's January 2026 judgment continues to bind the High Court.

### Supreme Court's January 2026 Position

**Hierarchy of participation:** The SC placed Khalid and Imam on a "higher footing" in the alleged conspiracy than five co-accused who were granted bail.

**Fresh Bail:** The Court had permitted them to seek bail after examination of protected witnesses or after one year from the January order, whichever was earlier.

**Police's Argument:** Since neither condition has been met, the Delhi Police argues that their fresh bail pleas are premature.

**Trial Status:** Charges have not yet been framed; therefore, examination of witnesses has not commenced.

### Emerging Legal Conflict

**Divergent SC Views:** A subsequent May 2026 judgment expressed serious reservations about aspects of the January judgment.

**UAPA Bail Jurisprudence:** Khalid and Imam rely on divergent Supreme Court approaches to bail under the Unlawful Activities (Prevention) Act (UAPA), particularly while a larger-Bench reference on the issue remains pending.

### Core Legal Issue

The dispute raises a broader question of judicial precedent and bail under UAPA: whether the January judgment must continue to govern Khalid and Imam until the larger Bench settles the conflicting legal position.

**Police's Position:** The pending larger-Bench reference does not suspend or unsettle the January ruling. Instead, courts remain bound by it until it is reconsidered or overruled.

**Significance:** The case illustrates the tension between precedent, personal liberty, prolonged pre-trial detention and the stringent bail framework under anti-terror legislation, particularly where different Supreme Court Benches have expressed divergent views.

## OBC creamy-layer criteria: Supreme Court to set up special Bench to hear Centre's plea

The Supreme Court has agreed to consider a special Bench on the Centre's plea seeking clarification on applying its March 11, 2026 judgment on OBC creamy-layer criteria to CSE 2025. The Centre seeks to allocate services to the 958 recommended candidates using the earlier interpretation of the income test.

### Key Provisions

**Income Test:** The Court held that parental salary cannot be mechanically included in the income/wealth test for determining OBC creamy-layer status where no equivalence has been established between the parents' posts in PSUs/private employment and government posts.

**Discrimination:** Applying salary income to children of PSU/private-sector employees while excluding it for comparable government employees could create "hostile discrimination".

**Relief:** The Court directed the Centre to create supernumerary posts for affected OBC candidates who had lost reservation benefits solely because of their parents' salary income.

### Why Is the Centre Seeking Clarification?

**Retrospective Impact:** The Centre argues that retrospective application could reopen large numbers of recruitments, examinations and admissions conducted under the earlier interpretation.

**Service Seniority:** Reallocating services to previously excluded candidates could alter seniority, cadre allocation and promotion of officers already in service.

**CSE 2025-26:** The Centre seeks to apply the earlier criteria to CSE 2025 and 2026, arguing that candidates entered the examinations under the existing rules and that changes at this stage would create uncertainty.

**Wider Consequences:** The government estimates that retrospective application could affect lakhs of OBC recruitments and admissions, generating fresh claims and litigation across government departments and educational institutions.



### PYQ Compass

Q. Consider the following statements : (2023)

Statement-I: The Supreme Court of India has held in some judgments that the reservation policies made under Article 16(4) of the Constitution of India would be limited by Article 335 for maintenance of efficiency of administration.

Statement-II: Article 335 of the Constitution of India defines the term 'efficiency of administration'.

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

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



- **Creamy layer** refers to economically and socially well-off families among OBCs who do not get the benefit of reservation.



- **Its purpose** is to ensure that the benefit of reservation reaches those who are genuinely needy and backward.



- In **1992**, the Supreme Court first applied the principle of the creamy layer in the Indira Sawhney (Mandal Commission) case.



- Following this judgment, the affluent section of OBCs was excluded from reservation in government jobs and educational institutions.



- At present, the creamy layer rule does not apply to SCs and STs. The Central government has also reiterated this clearly before the Supreme Court.



- According to the Centre, SC-ST reservation is based on social and historical discrimination, not merely on economic status.

### Core issue

The case highlights the tension between giving effect to a judicial interpretation of reservation law and maintaining finality, fairness and administrative stability in recruitment and service matters. The Supreme Court's clarification will determine how the March 11 interpretation should operate for past and ongoing selections.

### PRACTICE QUESTIONS

Q. With reference to the Indian Standard Time (IST), consider the following statements:

1. The Legal Metrology (Indian Standard Time) Rules seek to establish IST as the single reference for specified legal, administrative and commercial purposes.
2. The initiative seeks to reduce dependence on foreign sources for time synchronisation.
3. NavIC has no potential role in India's independent time-dissemination infrastructure.

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

Ans: (a)

Statement 1 is correct. The rules establish IST as the reference time for legal, administrative, commercial and official purposes, thereby promoting uniform timekeeping.

Statement 2 is correct. Reliable domestic time synchronisation is important for sectors such as banking, digital payments, telecommunications, transport, power systems and emergency services. It also reduces dependence on external time references.

Statement 3 is incorrect. NavIC, India's regional navigation satellite system, can contribute to an indigenous precision timing ecosystem.

Q. With reference to the OBC creamy layer, consider the following statements:

1. The creamy-layer principle seeks to exclude the socially and economically advanced sections of OBCs from the benefit of reservation.
2. The Supreme Court has held that parental salary can be mechanically treated as determinative of creamy-layer status irrespective of the nature of employment.
3. Judicial interpretation of creamy-layer criteria can have implications for recruitment, seniority and service allocation.

Which of the statements given above is/are correct?

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

Ans: (a)

**Statement 1 is correct.** The creamy-layer principle is intended to ensure that reservation benefits reach the socially and educationally backward sections of the OBC category rather than relatively advanced sections.

**Statement 2 is incorrect.** The recent Supreme Court judgment questioned the mechanical inclusion of parental salary where there is no equivalence between private/PSU employment and the corresponding government-post categories used in determining creamy-layer status.

**Statement 3 is correct.** Changes in the interpretation of creamy-layer criteria can affect past and ongoing recruitments, service allocation, seniority, cadre placement and promotions.

## India-Uzbekistan Ties Elevated to Comprehensive Strategic Partnership

India and Uzbekistan have elevated their bilateral relationship to a Comprehensive Strategic Partnership, with the two sides signing 11 agreements and set a target of \$5 billion in annual bilateral trade by 2030, compared with the current trade volume of over \$1 billion. The partnership covers trade, investment, critical minerals, uranium, defence, digital public infrastructure, agriculture, pharmaceuticals, education and culture, strengthening India's engagement with Central Asia.



### Major Outcomes of the Agreement

**Trade & Economy:** Target of \$5 billion annual bilateral trade by 2030, with cooperation in mining, agriculture, pharma, infrastructure and tourism; barriers related to market access, banking, payments and connectivity to be addressed.

**Energy & Critical Minerals:** Long-term uranium supply arrangement and cooperation in exploration, mining, processing, value addition and recycling of critical minerals.

**Defence & Security:** Focus on co-development and co-production of defence equipment, alongside stronger cooperation against terrorism, extremism and separatism.

**Digital Cooperation:** UPI-UZQR integration will enable Indian UPI apps to make merchant payments in Uzbekistan.

**Culture & Environment:** Restoration of **Fayaz Tepa and Kara Tepa** Buddhist sites, along with a \$1 million grant for afforestation in the Aral Sea region.

**Institutional Mechanisms:** A Foreign Ministers' Coordination Council and an upgraded ministerial-level Joint Commission will provide stronger institutional oversight

### Significance of Uzbekistan for India's Central Asia Policy

**Economic integration:** The \$5-billion trade target and expanded investment can deepen India's economic engagement with Central Asia.

**Critical-mineral security:** Joint exploration and processing can diversify mineral supply chains and reduce dependence on concentrated sources, including China; initiatives such as KABIL support this objective.

**Energy security:** Long-term uranium supplies can strengthen India's nuclear fuel security; the 2008 NSG waiver facilitates India's international civil nuclear cooperation despite not being an NPT signatory.

**Strategic and security interests:** Stronger ties with Uzbekistan enhance India's regional presence amid Chinese influence, Afghanistan-related instability and terrorism.

**Connectivity and geopolitical reach:** Partnership with Uzbekistan can strengthen India's access to Central Asia through Chabahar and INSTC, despite the lack of direct land connectivity.

**Civilisational diplomacy:** Cooperation on Buddhist heritage sites reinforces India's historical links with Central Asia through the Silk Road.

### Major Challenges and Way Forward

India's Central Asia engagement faces connectivity gaps, low trade volumes, competing Chinese and Russian influence, regional insecurity and financial constraints. The absence of direct land access makes Chabahar and INSTC crucial for reducing transport barriers. India should therefore improve market access, banking and payment linkages, deepen private-sector participation and pursue joint exploration, processing and value addition of critical minerals. Expanding UPI/Digital Public Infrastructure and institutionalising the India-Central Asia Dialogue can further strengthen India's economic and strategic presence while supporting greater strategic autonomy.



### PYQ Compass

Q. Critically analyse India's evolving diplomatic, economic, and strategic relations with the Central Asian Republics (CARs), highlighting their increasing significance in regional and global geopolitics. (GS II - 2024)

## Nepal flash floods: What caused the devastation?

A devastating flash flood in the Bhote Koshi–Trishuli river system has caused extensive loss of life and infrastructure in Nepal and Tibet, with many people reported missing. The event has drawn attention to the growing complexity of high-altitude Himalayan hazards and the limitations of conventional flood and earthquake-based early-warning systems.



### What Triggered the Flood?

**Ice-Rock Avalanche:** Evidence from the USGS and ISRO's National Remote Sensing Centre (NRSC) indicates that a large mass of ice, rock and debris collapsed from a glaciated cliff near Langtang Lirung, rather than the flood being directly triggered by heavy rainfall.

**Chain Reaction:** The mass fell from about 5,200 m, gained additional ice, rock, sediment and water while descending, entered the Lhunde Khola, temporarily blocked the river and generated a powerful downstream surge through the Bhote Koshi–Trishuli system.

**Seismic Signal:** The collapse itself generated strong ground vibrations. An initial signal was mistakenly interpreted as a magnitude-4.4 earthquake. Subsequent analysis showed that the seismic energy originated from the mountain collapse. The initial collapse was estimated to release energy equivalent to about M5.2, demonstrating that significant seismic signals need not originate from earthquakes.

**Remote Sensing Evidence:** NRSC compared pre- and post-event satellite imagery, identifying major physical changes around the suspected source area. This independently supports the seismic evidence, although the exact mechanics of the collapse are still being reconstructed.

### Ice-rock avalanche and GLOF

**Ice-Rock Avalanche:** A rapid collapse of ice and rock from a steep mountain slope that incorporates snow, water, soil and boulders during movement and can transform into a highly mobile debris flow.

**GLOF:** A Glacial Lake Outburst Flood occurs when a glacial lake suddenly drains, usually because its natural dam fails.

**Key Difference:** The 2023 South Lhonak disaster in Sikkim was primarily a GLOF, whereas the Nepal event appears to have originated from an ice-rock collapse.

**Hazard Overlap:** These processes can interact—an avalanche entering a glacial lake can generate a wave, breach the lake's natural dam and trigger a GLOF.

### Why Himalayan Hazards Are Difficult to Predict

**Threshold Problem:** Scientists can identify unstable slopes, glaciers and glacial lakes but generally cannot determine the exact moment of failure.

**Multiple Triggers:** Temperature rise, accelerated melting, meltwater infiltration, cracking, freeze–thaw cycles, permafrost degradation and unstable bedrock can alter mountain-slope stability.

**Cascading Hazards:** A single high-altitude collapse can trigger a sequence—ice/rock avalanche → river blockage → temporary impoundment → sudden release → debris flow/flash flood—making conventional hazard classification inadequate.

**Climate Change:** Warming does not mechanically cause every individual collapse, but it can modify glacier geometry, meltwater availability, permafrost and slope stability, potentially increasing the vulnerability of high-mountain systems.



### PYQ Compass

Q. Describe the various causes and the effects of landslides. Mention the important components of the National Landslide Risk Management Strategy. (GS III – 2011)

### PRACTICE QUESTIONS

Q. With reference to India's engagement with Central Asia, consider the following statements:

India's Central Asian policy is influenced by energy and critical-mineral security.

India's engagement with the region is limited primarily to cultural diplomacy.

Security cooperation has significance in the context of terrorism and instability in Afghanistan.

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

Ans: (a)

Statement 1 is correct. Central Asia offers opportunities for cooperation in uranium, critical minerals, energy and related supply chains, making the region important for India's strategic economic interests.

Statement 2 is incorrect. Cultural and civilisational links are important, but India's engagement extends to trade, investment, connectivity, defence, counter-terrorism, digital cooperation and energy security.

Statement 3 is correct. Instability in Afghanistan and the threat of terrorism and extremism give Central Asia significant security and strategic importance for India.

India's Central Asian policy therefore combines economic, strategic, security, connectivity and civilisational objectives.

Consider the following pairs:

Hazard Characteristic

1. Glacial Lake Outburst Flood – Sudden release of water stored in a glacial lake
2. Ice-rock avalanche – Rapid downslope movement of ice and rock
3. Landslide-dammed flood – Failure of a natural dam formed by landslide material

Which of the pairs given above is/are correctly matched?

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

Ans: (d)

GLOF occurs when a glacial lake suddenly drains, generally following failure of its natural dam.

An ice-rock avalanche involves rapid movement of ice and rock from a mountain slope.

A landslide-dammed flood can occur when landslide material blocks a river and the resulting natural dam subsequently fails.

Importantly, these hazards can interact. For example, an ice-rock avalanche entering a glacial lake may generate a wave and contribute to dam failure, producing a GLOF.

## Sugar Price Rise and the Ethanol–Food Security Trade-off

Sugar prices rose sharply from around ₹45/kg to ₹65/kg between July and August 2026, amid tightening supplies ahead of the festive season. The episode has highlighted the growing food–fuel trade-off created by India's rapid expansion of ethanol blending.



### Reasons for the Sugar Price Rise

**Low Opening Stocks:** Carry-over stocks fell to around 5 MT, compared with 8 MT the previous year, leaving a smaller buffer.

**Lower Production:** The 2025–26 production estimate was revised from 34.3 MT to 30.6 MT, mainly due to crop damage from red rot and top borer; actual output could fall further.

**Ethanol Diversion:** Around 2.75 MT of sugar was diverted for ethanol production, tightening supplies further.

**Festive Demand:** Sugar demand is expected to rise during the festive season, while fresh cane supplies will increase only from mid-October, putting further pressure on existing stocks.

**Speculation:** Hoarding and speculative activity may have amplified the price increase, but the underlying issue is tight supply and thin inventories.

### Ethanol–Food Security Trade-off

India's ethanol blending expanded rapidly from about **5% in 2019–20** to **20% in 2025–26**, but feedstock availability has not increased at the same pace. Greater diversion of sugar, rice and maize towards ethanol can therefore affect food availability and prices.

**Sugar:** Diverting sugar for ethanol can reduce supplies and raise sugar prices.

**Rice:** Using surplus FCI rice can reduce pressure on sugar, but should be limited to genuine surplus stocks and priced appropriately.

**Maize:** A relatively water-efficient feedstock, but greater diversion could raise maize prices and affect poultry, dairy and other sectors dependent on maize.

**Core Issue:** Shifting between feedstocks does not eliminate the food–fuel trade-off unless agricultural productivity and genuine surpluses increase.



### Policy Response and Way Forward

**Stabilise Sugar Supply:** Import sufficient sugar and release stocks to rebuild the buffer before the festive season.

**Rebalance Feedstocks:** Temporarily reduce dependence on sugar-based ethanol and use alternative feedstocks where genuine surpluses exist.

**Promote Maize Productivity:** Increase maize yields to create sufficient surplus for ethanol without competing excessively with food and feed demand.

**Maintain Flexibility:** Allow oil marketing companies greater flexibility to choose economical and sustainable feedstocks, subject to food-security safeguards.

**Use Imports as a Buffer:** Imported sugar or ethanol can serve as a temporary safety valve during domestic supply shortages.

**Recalibrate Ethanol Policy:** Evaluate the programme on energy balance, food security, water use, farmer interests and environmental sustainability, rather than pursuing blending targets alone.



### PYQ Compass

Q. According to India's National Policy on Biofuels, which of the following can be used as raw materials for the production of biofuels? (2020)

1. Cassava
2. Damaged wheat grains
3. Groundnut seeds
4. Horse gram
5. Rotten potatoes
6. Sugar beet

Select the correct answer using the code given below:

- a) 1,2,5 and 6 only
- b) 1,3,4 and 6 only
- c) 2,3,4 and 5 only
- d) 1,2,3,4,5 and 6

## PPPAC in-principle nod for privatisation of 11 airports



**Approval:** PPPAC has given in-principle approval for the third round of airport privatisation, covering 11 airports in 5 bundles; final PPPAC approval will precede consideration by the CCEA.

**Airport Bundles:** Amritsar-Kangra; Varanasi-Gaya-Kushinagar; Bhubaneswar-Hubballi; Raipur-Aurangabad; Tiruchirappalli-Tirupati.

**Competition Concern:** To prevent excessive concentration and oligopolistic risks, the Civil Aviation Ministry proposes capping the number of bundles awarded to a single bidder; the limit is yet to be finalised.

**Policy Context:** The concern follows the previous round, when the Adani Group won all six airports offered. Earlier proposals by the Finance Ministry and NITI Aayog to restrict a bidder to two airports and require prior airport-management experience were not accepted.

**Concession Model:** Airports will be offered through 50-year concession agreements, with the per-passenger fee for domestic passengers as the bidding parameter.

### PYQ Compass



Q. What is the need for expanding the regional air connectivity in India? In this context, discuss the government's UDAN Scheme and its achievements. (GS III - 2024)

## 10 years of UPI: How can it expand new frontiers for digital payments?

**Scale:** Launched by NPCI in 2016, UPI grew from 1.78 crore transactions in FY2017 to over 24,162 crore in FY2026, making India the world's largest market for real-time payment volumes.

**Financial Inclusion:** QR-based, low-cost payments have enabled small merchants and informal businesses to accept digital payments without expensive POS infrastructure.

**Digital Diplomacy:** UPI's international expansion and India's Digital Public Infrastructure (DPI) partnerships are extending India's technological influence and promoting interoperable, low-cost payment systems globally.

**Next Frontier:** UPI can expand beyond retail payments into digital lending, insurance, investments, remittances, taxation, capital markets and corporate payments, supported by risk-based limits and enterprise integration.

**Key Challenge:** Its zero-MDR model accelerated adoption but has created concerns over the financial sustainability of payment providers, while wider business adoption requires greater confidence in data use and tax compliance.

**Way Forward:** UPI's next phase must balance scale, innovation, globalisation and financial sustainability, while integrating digital payments more deeply into India's business and government systems.

### PYQ Compass



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

- (a) To allow government control over all digital commerce transactions
- (b) To replace private e-commerce players
- (c) To break the dominance of large e-commerce platforms by enabling interoperability across networks
- (d) To mandate UPI based payments for all online transactions

### PRACTICE QUESTIONS

Q. With reference to Unified Payments Interface (UPI), consider the following statements:

1. UPI was developed by the National Payments Corporation of India (NPCI).
2. Its principal contribution to financial inclusion is limited to enabling high-value institutional transactions.
3. International expansion of UPI can contribute to India's digital diplomacy.

Which of the statements given above is/are correct?

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

Ans: (a)

- Statement 1 is correct. UPI was developed and is operated within the ecosystem of NPCI and was launched in 2016.
- Statement 2 is incorrect. UPI's major strength lies in high-volume, low-value retail transactions, including QR-based payments by small merchants and individuals. Large-value institutional transactions continue to rely significantly on systems such as RTGS.
- Statement 3 is correct. Expansion of UPI and cooperation on digital public infrastructure can extend India's technological influence and constitute an element of digital diplomacy.

UPI therefore represents not only a payment system but also an instrument of financial inclusion, digital public infrastructure and international economic engagement.

Q. Consider the following statements regarding ethanol blending in India:

1. Ethanol blending can reduce dependence on imported crude oil.
2. Diversion of sugar towards ethanol can create a food-security concern when sugar production is under pressure.
3. Increasing ethanol blending necessarily increases vehicle mileage.

Which of the statements given above is/are correct?

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

Ans: (a)

Statement 1 is correct. Ethanol blending reduces the quantity of petrol required from fossil-fuel sources and can therefore contribute to energy security, lower crude-oil import dependence and foreign-exchange savings.

Statement 2 is correct. Sugarcane and other crops can serve as ethanol feedstocks. When sugar production falls, diverting additional sugar towards ethanol may tighten food supplies and increase prices, creating a fuel-versus-food trade-off.

Statement 3 is incorrect. Ethanol has lower energy density than petrol. Higher ethanol blends can therefore result in some reduction in fuel efficiency, particularly in vehicles not optimised for the blend.

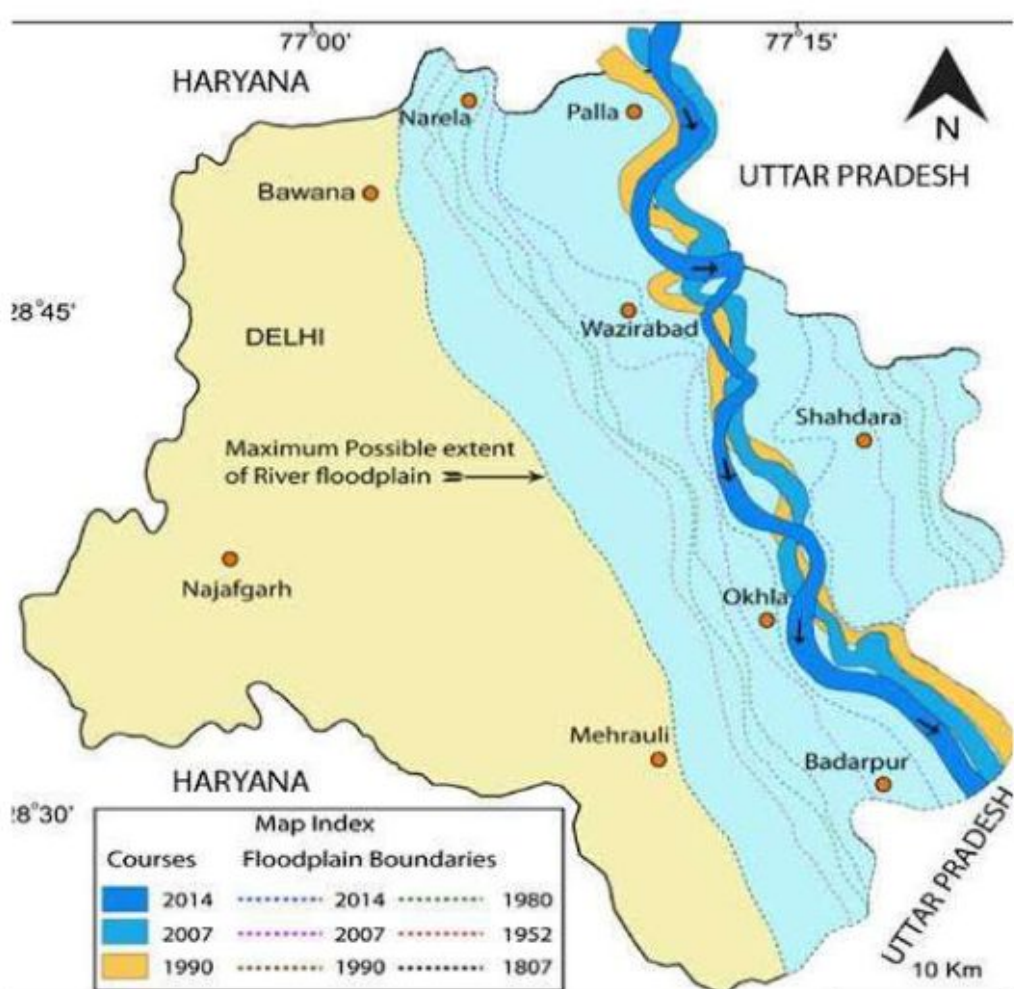
## ECOLOGY

### Yamuna floodplains: Supreme Court sets aside NGT order against Art of Living

The Supreme Court recently set aside a December 2017 decision of the National Green Tribunal (NGT) holding Sri Sri Ravi Shankar's Art of Living Foundation responsible for damage to the Yamuna floodplains during its 2016 World Culture Festival. The Court also directed the Delhi Development Authority (DDA) to refund the ₹5 crore deposited by the Foundation for floodplain restoration.

**Why did the Court make this decision?** The Court criticised the DDA for permitting the event on an active floodplain, observing that such permission was inconsistent with the precautionary principle and the doctrine of public trust. However, it also found that the NGT had failed to establish that the Foundation caused additional damage to the floodplain. The site was already in a damaged condition before it was handed over to the Foundation, and the NGT had not adequately examined contemporaneous evidence regarding this pre-existing damage. Therefore, the Court held that the Foundation could not be held responsible for environmental damage without sufficient evidence linking the additional damage to its activities.

The Court clarified that the DDA remains responsible for the rehabilitation of the Yamuna floodplains and must continue the restoration work in accordance with the NGT's directions.



### Crops below, solar above: How agrivoltaics can boost farmer income

Researchers at the BAIF Rural Innovation Centre, Uruli Kanchan, are testing agrivoltaics which involves the combined use of agricultural land for crop cultivation and solar power generation. The project is examining 17 types of solar-panel installations and 30 crops to identify suitable crop-panel combinations.

Researchers are testing vertical and elevated panels, including structures raised up to four metres to allow farm machinery to operate underneath, along with solar installations integrated with polyhouses, cattle sheds, poultry sheds and farm ponds. The study is assessing how panel height, spacing and design affect crop productivity and electricity generation.

Preliminary results vary across crops and seasons. During the kharif season, crops such as spinach, lettuce and coriander recorded yields about 100% higher than control plots (plots without solar panels), while brinjal recorded around 80% of control yields. Solar panels may also provide some crops protection from intense heat and erratic rainfall.

The study aims to assess the economic viability of agriculture-compatible solar structures. Its findings may also help expand the scope of PM-KUSUM, which has largely focused on conventional solar installations. If suitable crop-solar combinations are identified, farmers could potentially earn from both agricultural production and electricity generation from the same land.



#### PYQ Compass

Q. Consider the following statements: (2022)

1. Gujarat has the largest solar park in India.
2. Kerala has a fully solar powered International Airport.
3. Goa has the largest floating solar photovoltaic project in India.

Which of the statements given below is/are correct?

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

## Assam elephant habitat recovery hope rides on biochar from invasive plants

A project in **Khalingduar Reserve Forest**, Assam, is seeking to improve elephant habitat by controlling invasive alien plants (IAPs) that suppress native vegetation and reduce the availability of forage for elephants and other herbivores.

The project targets three invasive species such as **Lantana camara**, **Chromolaena odorata** and **Mikania micrantha**. Dense stands of these species can restrict the regeneration of native grasses, herbs, shrubs and trees, thereby reducing the diversity of the herbivore food base.

The project, supported by the **International Elephant Foundation** and implemented by Aaranyak, combines **targeted removal of IAPs, seed-ball-assisted regeneration of native vegetation, and conversion of cleared plant biomass into biochar**. The target area is periodically monitored so that invasive plants can be removed again if they re-emerge.

Biochar is a stable, charcoal-like form of carbon produced by heating organic biomass with little or no oxygen. Unlike ordinary burning, this process converts the biomass into a relatively stable form of carbon that can remain in soil for long periods. Its porous structure can also improve soil water and nutrient retention and provide habitat for soil microorganisms. Thus, the project aims to address two problems simultaneously: restoring native vegetation and reducing invasive plant dominance, while converting the removed biomass into a potentially carbon-rich soil amendment.



## Supreme Court bans construction within 100 m of Jojari river in Rajasthan

The Supreme Court has prohibited construction and development within 100 metres of the Jojari River in Rajasthan and barred hazardous industries or activities within 500 metres on either side of the existing flood line or present flow path where the flood line has not yet been scientifically determined.

The restrictions are aimed at protecting the riverine ecosystem from widespread pollution and degradation. The seasonal Jojari River has faced severe contamination, affecting communities in the water-stressed region. The Court also observed that much of the industrial area in Pali is located along the riverbank and said that the State should consider relocating industries away from the river in the long term.

The 500-metre restriction is an interim safeguard until a scientific exercise determines and demarcates the high flood line and appropriate ecological buffer zone. It is intended to prevent further pollution or ecological damage while the permanent protection measures are being worked out.

The Jojari and Bandi rivers eventually merge with the Luni River near Balotra, making the issue relevant to the wider river system. The Court had earlier directed Rajasthan to prepare a 20-point resolution plan and constitute an Integrated Coordination Group (ICG), headed by the Chief Secretary, to address contamination in the Jojari, Bandi and Luni rivers.



### PYQ Compass

Q. With reference to Indian elephants, consider the following statements: (2020)

1. The leader of an elephant group is a female.
  2. The maximum gestation period can be 22 months.
  3. An elephant can normally go on calving till the age of 40 years only.
  4. Among the States in India, the highest elephant population is in Kerala.
- Which of the statements given above is/are correct?

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

### PRACTICE QUESTIONS

Q. The Supreme Court set aside the National Green Tribunal's decision holding the Art of Living Foundation responsible for damage to the Yamuna floodplains. Which of the following gives the correct reason(s) for the same?

1. The Supreme Court observed that the NGT had not adequately established that the Foundation caused additional damage to the floodplain.
2. The Supreme Court held that the Delhi Development Authority was not responsible for permitting the event on an active floodplain.

Select the correct answer using the code given below:

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

Ans: a) 1 only

Statement 1 is correct. The Supreme Court noted that the floodplain was already damaged before it was handed over to the Foundation and that the NGT had failed to adequately establish that the Foundation caused additional damage. Statement 2 is incorrect. The Court criticised the DDA for permitting the event on an active floodplain, observing that such permission was inconsistent with the precautionary principle and doctrine of public trust. However, the Court did not hold that the DDA was "not responsible"; it clarified that the DDA would continue to be responsible for the rehabilitation of the Yamuna floodplains.

Q. The terms *Lantana camara*, *Chromolaena odorata* and *Mikania micrantha*, sometimes seen in the context of forest management, refer to:

- a) Invasive alien plant species
- b) Endemic medicinal plant species
- c) Mangrove plant species
- d) Nitrogen-fixing leguminous species

Ans: a

*Lantana camara*, *Chromolaena odorata* and *Mikania micrantha* are invasive alien plant (IAP) species. Their dense proliferation can suppress native vegetation by competing for light, space, moisture and nutrients, thereby affecting ecosystem regeneration and reducing the availability of native forage for herbivores.

SCIENCE

Government restricts FDCs with chlorpheniramine, phenylephrine for children below 4

The Union Health Ministry has restricted the manufacture, sale and distribution of all **fixed-dose combinations (FDCs)** containing **chlorpheniramine maleate** and **phenylephrine hydrochloride**, with a mandatory warning that these medicines must not be used in children below four years of age.

The decision follows recommendations from an **expert committee and the Drugs Technical Advisory Board (DTAB)**. The Government cited the potential risks of these combinations in young children and the availability of safer alternatives. Children are particularly vulnerable to dosing errors and adverse effects from multi-ingredient medicines, while evidence of significant benefit for uncomplicated colds in young children is limited.

Manufacturers must prominently display the warning :**“Fixed Dose Combination shall not be used in children below four years of age”** on the label, package insert and promotional literature.

The restriction has been issued under **Section 26A of the Drugs and Cosmetics Act, 1940**, which empowers the Central Government to regulate or prohibit the manufacture, sale or distribution of drugs in the public interest.

The latest move extends earlier restrictions on specific formulations to all FDCs containing these two ingredients, reflecting increased scrutiny of paediatric cough-and-cold medicines and a greater emphasis on preventing avoidable risks in young children.



OpenAI unveils ChatGPT for Teens with stronger guardrails

OpenAI has launched ChatGPT for Teens for users aged 13–17, with stronger safeguards intended to reduce risks associated with AI use by minors. Users identified as under 17, including those whom OpenAI’s systems determine to be minors, may be placed under the teen experience.

The service includes parental controls, quiet hours, study mode, break reminders and high-risk notifications. Parents can link their accounts with those of their teens and receive alerts in certain situations requiring possible real-world intervention. Other safeguards include the option to disable memory and voice mode, restrictions on image generation, and warnings against uploading sensitive images.

The teen experience places stricter restrictions on content involving self-harm, suicide, violence, eating disorders, dangerous activities and explicit sexual or graphic material. OpenAI also says the chatbot should not encourage emotional dependence, use romantic language, or imply that it has feelings or consciousness.

For education, the study mode is designed to guide students through problems step-by-step rather than simply provide answers. It can ask questions, provide hints and encourage students to arrive at solutions themselves, with inputs from teachers, scientists and other experts.

The move comes amid concerns about AI dependence, mental-health risks, reduced critical-thinking skills and emotional attachment to chatbots, particularly among young users.



PYQ Compass

- Q. Do you think digital technology promotes social empowerment? Explain with examples (GS II - 2026)
- Q. Evaluate the impact of globalization on Indian youths with reference to social, political, economic and cultural spheres (GS II - 2026)

## SCIENCE

### Patient Data Collective for Rare Disease Research

Researchers have proposed a Patient Data Collective (PDC) in the form of a cooperative model that would hold and manage patients' data on their behalf for research. It could aggregate information from patient groups, hospitals, clinicians, Centres of Excellence for Rare Diseases and digital health platforms, with patient consent and safeguards for privacy, security, accuracy and ethical use.

Patient data such as medical records, diagnostic information and patient-reported experiences are important for developing treatments for rare diseases. They can help identify biomarkers, understand disease progression, select suitable clinical-trial participants and establish meaningful clinical endpoints.

Conventional clinical trials are difficult for rare diseases because too few patients may be available to participate, making it difficult to create adequate treatment and control groups. Patient registries and natural-history studies, which track patients and disease progression over time, can provide real-world evidence and serve as external controls for clinical trials.

The PDC could use artificial intelligence (AI) to analyse large and diverse datasets, identify medically relevant patterns and help generate virtual or synthetic control groups for clinical research. India's Ayushman Bharat Digital Health Mission (ABDM) could potentially support the secure aggregation and sharing of patients' digital health records.

Such a system could strengthen natural-history studies and real-world evidence, make clinical trials for rare diseases more feasible, reduce uncertainty for drug developers and accelerate the development and regulatory approval of orphan drugs. However, its success would depend on strong data governance, informed consent, privacy protection, accuracy, ethical oversight and government or philanthropic support.

### Indian rock yields oldest directly dated traces of microbial life

**Discovery:** Researchers found evidence suggesting microbial life existed around 3.5 billion years ago in the Singhbhum Craton of eastern India (Jharkhand–Odisha), one of Earth's oldest continental blocks.

**Rock Evidence:** A banded chert from Bhitardari preserved carbon-bearing material. Zircon dating indicated the rock formed about 3.497 billion years ago.

**Biological Signature:** Carbon-isotope composition and the nature of the preserved material point towards degraded organic matter of biological origin, rather than later inorganic contamination.

**Significance:** The evidence places life only about 1 billion years after Earth formed (~4.54 billion years ago), suggesting life may have emerged relatively early in Earth's history.

**Scientific Caution:** Unlike a direct fossil, the conclusion rests on converging geochemical and geological evidence. Older claims of 3.7–3.8-billion-year-old life from Greenland remain debated.

**Broader Implication:** The finding provides clues to the early evolution of life and the possibility that microbial life could emerge relatively readily on other habitable planets.



**PYQ Compass**

Q. COVID-19 pandemic has caused unprecedented devastation worldwide. However, technological advancements are being availed readily to win over the crisis. Give an account of how technology was sought to aid management of the pandemic. (GS III - 2019)

### PRACTICE QUESTIONS

Q. The terms chlorpheniramine maleate and phenylephrine hydrochloride, recently in the news in the context of restrictions on certain medicines, refer respectively to:

- a) An antibiotic and an antiviral drug
- b) An antihistamine and a decongestant
- c) A decongestant and an antibiotic
- d) An antiviral drug and an antihistamine

Ans: b

Chlorpheniramine maleate is an antihistamine, commonly used to reduce symptoms such as sneezing and a runny nose. Phenylephrine hydrochloride is a decongestant, used to relieve nasal congestion. The Union Health Ministry has restricted fixed-dose combinations containing these ingredients for use in children below four years of age, citing potential risks and the availability of safer alternatives.

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

- 1. It involves combining agricultural activities with solar power generation on the same land.
- 2. The design, height and spacing of solar panels can influence the suitability and productivity of crops.
- 3. It necessarily requires agricultural land to be completely converted into conventional solar parks.

Which of the statements given above is/are correct?

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

Ans: a

Statements 1 and 2 are correct. Agrivoltaics seeks to combine crop cultivation and solar electricity generation on the same land. Different panel designs, including elevated and vertical structures, can affect crop growth, machinery access and agricultural productivity. Statement 3 is incorrect because agrivoltaics is specifically intended to retain agricultural use while generating solar power, rather than completely replacing farming with conventional solar installations.

## PYQ Compass



Q. With reference to Indian elephants, consider the following statements: (2020)

1. The leader of an elephant group is a female.
2. The maximum gestation period can be 22 months.
3. An elephant can normally go on calving till the age of 40 years only.
4. Among the States in India, the highest elephant population is in Kerala.

Which of the statements given above is/are correct?

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

Ans : a

1. The leader of an elephant group is a female. This is correct.

In elephant herds, the leader is usually the oldest female, also known as the matriarch. She is responsible for guiding the herd.

2. The maximum gestation period can be 22 months. This is correct. The gestation period of an elephant is the longest of any land mammal, ranging up to 22 months.

3. An elephant can normally go on calving till the age of 40 years only. This is incorrect. Elephants can calve for much longer, typically up to 50 years, depending on the individual elephant's health and environmental factors.

4. Among the States in India, the highest elephant population is in Kerala. This is incorrect. The highest elephant population in India is found in Karnataka, not Kerala.

Q. Which of following statements is/are correct? (2016)

Proper design and effective implementation of UN REDD+ Programme can significantly contribute to

1. Protection of biodiversity
2. Resilience of forest ecosystems
3. Poverty reduction

Select the correct answer using the code given below

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

Ans : a

The UN-REDD+ Programme (United Nations Collaborative Programme on Reducing Emissions from Deforestation and Forest Degradation) is aimed at reducing emissions from deforestation and forest degradation in developing countries. It also seeks to enhance forest carbon stocks and help protect biodiversity and ecosystems.

## PYQ Compass



Q. In India, separation of judiciary from the executive is enjoined by (2020)

- (a) the Preamble of the Constitution
- (b) a Directive Principle of State Policy
- (c) the Seventh Schedule
- (d) the conventional practice

Ans : b

Article 50 of the Directive Principles of State Policy (DPSP) explicitly enjoins the separation of the judiciary from the executive in the public services of the state. This ensures the independence of the judiciary and prevents interference by the executive branch in judicial matters. The Preamble mentions justice but does not explicitly deal with the separation of powers.

Q. Consider the following countries :

- I. United Kingdom
- II. Denmark
- III. New Zealand
- IV. Australia
- V. Brazil

How many of the above countries have more than four time zones?

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

Ans : C

Due to its overseas territories (like Bermuda, British Virgin Islands, Falkland Islands, Pitcairn Islands, etc.), the **UK spans across 9 time zones**.

Faroe Islands and Greenland which are part of the Danish realm have separate time zones. Faroe has one distinct time zone and Greenland has three time zones. Hence, it has more than four time zones.

New Zealand has three time zones.

There are 6 time zones in Australia. Adding the country's 3 dependencies brings the total to 9 time zones. Australia's mainland states and territories are divided into 5 standard time zones. As Western Australia, Queensland, and the Northern Territory don't use Daylight Saving Time (DST), there are only 3 corresponding DST time zones. There are four standard time zones in Brazil. They are, from west to east: Acre Time (ACT), Amazon Time (AMT), Brasília Time (BRT), and Fernando de Noronha Time (FNT). Hence, option (c) is the correct answer.

## PYQ Compass



Q. Consider the following statements : (2023)

Statement-I: The Supreme Court of India has held in some judgments that the reservation policies made under Article 16(4) of the Constitution of India would be limited by Article 335 for maintenance of efficiency of administration.

Statement-II: Article 335 of the Constitution of India defines the term 'efficiency of administration'.

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

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

**Ans : C**

Statement-I: This is correct. The Supreme Court has held in several judgments (e.g., Indra Sawhney case, M. Nagaraj case) that reservation policies under Article 16(4) (which provides for reservation in public employment) must not compromise the "efficiency of administration" as mandated by Article 335. Article 335 states that claims of Scheduled Castes and Scheduled Tribes must be balanced with maintaining administrative efficiency. Statement-II: This is incorrect. Article 335 mentions "efficiency of administration" but does not define the term. The interpretation of what constitutes "efficiency of administration" is left to judicial interpretation and administrative practice. Thus, Statement-I is correct, and Statement-II is incorrect, making the correct answer (c) Statement I is correct but Statement-II is incorrect.

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

- (a) To allow government control over all digital commerce transactions
- (b) To replace private e commerce players
- (c) To break the dominance of large e commerce platforms by enabling interoperability across networks
- (d) To mandate UPI based payments for all online transactions

**Ans : c**

The Open Network for Digital Commerce (ONDC) is a transformative initiative by the Department for Promotion of Industry and Internal Trade (DPIIT), Ministry of Commerce, Government of India aimed at democratizing digital commerce. Launched in April 2022, ONDC is an initiative aiming at promoting open networks for all aspects of exchange of goods and services over digital or electronic networks. ONDC is based on open-sourced methodology, using open specifications and open network protocols independent of any specific platform.

## PYQ Compass



Q. Consider the following statements: (2022)

1. Gujarat has the largest solar park in India.
  2. Kerala has a fully solar powered International Airport.
  3. Goa has the largest floating solar photovoltaic project in India.
- Which of the statements given below is/are correct?

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

**Ans : b**

Statement 1: Gujarat has the largest solar park in India. This statement is incorrect. Gujarat does have a large solar park, but Kurnool in Andhra Pradesh currently has the largest solar park in India, called the Pavagada Solar Park. Statement 2: Kerala has a fully solar-powered International Airport. This statement is correct. Cochin International Airport in Kerala is the world's first fully solar powered airport, which is a significant achievement in renewable energy.

Statement 3: Goa has the largest floating solar photovoltaic project in India. This statement is incorrect. While Goa has a floating solar project, the largest floating solar project in India is in Telangana at the Srisailem Reservoir. Thus, the correct answer is b) 2 only.

Q. According to India's National Policy on Biofuels, which of the following can be used as raw materials for the production of biofuels? (2020)

1. Cassava
2. Damaged wheat grains
3. Groundnut seeds
4. Horse gram
5. Rotten potatoes
6. Sugar beet

Select the correct answer using the code given below:

- a) 1,2,5 and 6 only
- b) 1,3,4 and 6 only
- c) 2,3,4 and 5 only
- d) 1,2,3,4,5 and 6

**Ans : a**

According to India's National Policy on Biofuels, the following raw materials can be used for the production of biofuels:

1. Cassava – A starch-rich root crop used for bioethanol production.
2. Damaged wheat grains – used as a feedstock for bioethanol production.
3. Rotten potatoes – used for bioethanol production as they contain starch that can be fermented.
4. Sugar beet – Rich in sugar, it is used for bioethanol production.