



R.C.REDDY
IAS STUDY CIRCLE

August 2024

45+ Years Director's Experience | 35+ Years Institute's History

CURRENT AFFAIRS

Prelims UPSC CSE 2025

Monthly Magazine

**SUPREME COURT JUDGEEMENT ON
SC/ST SUB-CLASSIFICATION FOR SEPARATE QUOTAS
SUPREME COURT OF INDIA**



**Unified Pension
Scheme (UPS)**



- ★ **EXCLUSIVELY FOR PRELIMS 2025**
- ★ **TOPICS CHOSEN FROM MULTIPLE SOURCES**
- ★ **COMPREHENSIVE SUBJECT WISE TOPICS**
- ★ **MAP BASED CURRENT AFFAIRS TOPICS**
- ★ **TEST YOUR KNOWLEDGE BY TAKING OUR YEAR- LONG CA TEST SERIES**

 **040-23228513 / 27612673 / 27668513 / 9346882593 / 9573462587**

OUR BRANCHES

ASHOKNAGAR

Opp. Sub-Registrar Office, Gandhinagar Road, Ashoknagar cross Road, Hyderabad-500020

HIMAYATHNAGAR

Opp. Telangana Tourism Development Corporation, Near Telugu Academy, Himayathnagar, Hyderabad-500029

VISAKHAPATNAM

Vuda Complex, 2nd & 3rd floor, 2, MVP Main Rd, Sector 7, MVP Colony, Visakhapatnam, Andhra Pradesh-530017

PREFACE

Current Affairs UPSC CSE Prelims 2025

This high-quality monthly compilation of Current Affairs for Civil Services Exam Prelims 2025 is designed to help Civil Services Exam aspirants by:

1. **Saving preparation time:** Consolidates key current affairs from multiple sources for CSE Prelims.
2. **Reinforcing static concepts:** Links static concepts with current affairs
3. **Enhancing revision:** Combines important current affairs and static concepts for effective revision.

After reading this Current affairs magazine, you can test your concepts by taking our Current Affairs Test Series in Multiple Choice Question format which helps in the following ways:

- Aligns with the CSE prelims exam pattern.
- Aids understanding and recall by offering multiple perspectives on current affairs.
- Saves time, consolidates and aids quick revision

Details of our Current Affairs Test Series are on the back cover and inside this magazine.

Our team of content developers have worked rigorously to create this high-quality compilation, and we hope that all Civil Services and other competitive exam aspirants will make the best use of it. All the Best!

R. C. Reddy IAS Study
Circle Hyderabad



**For other months issues and updates
Join our telegram channel**

Table of Contents

1. POLITY	(Page 1)
2. ECONOMY	(Page 7)
3. GEOGRAPHY	(Page 19)
4. ENVIRONMENT	(Page 30)
5. SCIENCE & TECHNOLOGY	(Page 42)
6. INTERNATIONAL RELATIONS	(Page 70)
7. ART AND CULTURE	(Page 74)
8. MISCELLANEOUS	(Page 77)



@RCREDDYIAS

**For other months issues and updates
Join our telegram channel**

POLITY

1. Article 341 of the Indian Constitution

Context:

In a landmark judgement, a seven-judge Bench of the Supreme Court reframed how the Scheduled Castes (SC) and Scheduled Tribes (ST) quota may operate — for the very first time since reservations were introduced in the Constitution in 1950.

Article 341 of the Indian Constitution:

Clause (1): This clause grants the President of India the authority to specify, by public notification, the castes, races, tribes, or groups within them that shall be considered as Scheduled Castes in relation to a particular State or Union territory. If it pertains to a State, the President must consult the Governor of that State before making such a specification.

Clause (2): This clause empowers the Parliament of India to amend the list of Scheduled Castes specified in the President's notification under clause (1).

- Once a notification is issued under clause (1), it cannot be varied by any subsequent notification unless it is done so through a law enacted by Parliament.
- The Parliament can do so by enacting a law that either includes or excludes any caste, race, tribe, or groups within them from the list.

In a recent ruling, SC permitted states to create sub-classifications within the SC and ST categories for the purpose of wider protections — through fixed sub-quotas — to the most backward communities within these categories.



@RCREDDYIAS

For other months issues and updates
Join our telegram channel

2. Boilers Act, 1923

Context:

The Boilers Bill, 2024 was introduced in Rajya Sabha.

The Boilers Bill, 2024 repeals the Boilers Act, 1923.

About:

- The Boilers Act, 1923, a pre-constitution Act, deals with the safety of life and property.
- It was amended in the year 2007 by the Indian Boilers (Amendment) Act, 2007 wherein inspection and certification by independent third-party inspecting authorities was introduced.

The salient features of the Bill

- The similar provisions which are at different places in the Boilers Act, 1923 have been grouped together in six chapters for better understanding of the Act.
- Out of the seven offenses, to ensure safety of boilers and personnel dealing with boilers, in four major offenses which may result in loss of life and property, criminal penalties are retained.
- For other offenses, provision is being made for fiscal penalties.
- Moreover, for all non-criminal offenses 'fine' has been converted into 'penalty' to be levied through executive mechanism instead of courts as existed earlier.
- The proposed bill will enhance safety as specific provisions have been made in the Bill to ensure the safety of persons working inside a boiler and that repair of boilers is undertaken by qualified and competent persons.

3. Nandini Sahakar Yojana

Context:

Recently, the Minister of Cooperation informed the Rajya Sabha about the Nandini Sahakar Scheme.

About Nandini Sahakar Yojana:

- It is aimed at assisting women cooperatives to take up business model-based activities under the purview of the National Cooperative Development Corporation (NCDC).
- It is a women focused framework of financial assistance, project formulation, hand-holding and capacity development.

- **Funding: There is no minimum or maximum limit on financial assistance to projects by women cooperatives.**
- NCDC provides 2% interest subvention on its rate of interest on term loan portion for new and innovative activities.
- 1% interest subvention on its rate of interest on term loan portion for all other activities resulting in lower borrowing costs of women cooperatives.

Eligibility:

- Any cooperative society with three months in operation is eligible to apply for assistance which will be in the form of credit linkage for infrastructure term loan.
- **Women cooperatives are those which are registered as women cooperatives under any State / Central Act or those cooperatives which have minimum 50% women as primary members.**

Significance:

- The scheme is a framework of assistance to improve socio-economic status of women.
- It supports entrepreneurial dynamism of women through women cooperatives.
- It converges critical inputs of women's enterprise, business plan formulation, capacity development, credit and subsidy and interest subvention of other schemes.

4. Vice President Removal**Context:**

- **50 Opposition MPs have signed a resolution for a no-confidence motion against Vice-President Jagdeep Dhankhar**
- **The Opposition accuses the Chairman of making personal remarks against members, violating Rule 238(2) of the Rajya Sabha, which prohibits personal charges against members.**

About:

- **According to the Article 67(b) of the Constitution, the Vice President (Ex-officio Chairman of Rajya Sabha) may be removed from his office by a resolution of the Council of States (Rajya Sabha) passed by a majority of all the then members of the Council (effective majority) and agreed to by the House of the People (Lok Sabha).**

- But no resolution for the purpose of this clause shall be moved unless at least 14 days' notice has been given of the intention to move the resolution.
- **The resolution to remove Rajya Sabha Chairman can be introduced only in the Rajya Sabha.**

Historical Significance: If successful, this motion will be a historic first in Indian parliamentary history.

- The no-confidence motion against a sitting Vice President represents an extraordinary step, reflecting the depth of the current political discord.
- **Historically, such motions have been rare and usually pertain to the Prime Minister or other high-ranking officials.**

About No-confidence motion

- It is a parliamentary motion that signifies that the elected government no longer has the confidence of the majority of the members of the Lok Sabha, the lower house of India's Parliament.
- The primary purpose of a no-confidence motion is to test the strength and stability of the ruling government.
- If the motion is passed, it indicates that the government has lost the support of the majority and must resign.
- They have been a part of India's parliamentary history since independence.
- They serve as a crucial mechanism for ensuring accountability and transparency in governance.
- **Procedure: Any member of the Lok Sabha can introduce a no-confidence motion. It requires the support of at least 50 members to be admitted for discussion.**



@RCREDDYIAS

**For other months issues and updates
Join our telegram channel**

5. Joint Parliamentary Committee

Context:

The opposition has demanded a Joint Parliamentary Committee (JPC) to investigate the Hindenburg Research allegations against the SEBI chairperson.

What is a Joint Parliamentary Committee (JPC)?

- The Joint Parliamentary Committee (JPC) is an ad-hoc committee established by Parliament to conduct a thorough examination of a specific subject or Bill.
- It is also formed to investigate specific issues, often involving allegations of financial misconduct or corruption.

Formation:

- A JPC is created when a motion is passed in one House of Parliament (either the Lok Sabha or the Rajya Sabha) and then agreed upon by the other House.
- The motion outlines the committee's purpose and membership.

Membership:

- It consists of members from both Houses, ruling and opposition parties, and is chaired by a member of the Lok Sabha.
- The composition of the JPC is determined by the Parliament, and there is no fixed number of members.
- The committee is dissolved after completing its term or task.

Functioning:

- JPCs are tasked with conducting detailed investigations into the issue.
- They can review documents, interview officials, and gather evidence to understand and report on the matter thoroughly.
- **Ministers are not generally called by the JPC to give evidence, but with the permission of the Speaker, they can seek information on certain points from ministers and call them.**

- The JPC can take oral and written evidence or call for documents in connection with a matter under its consideration.

Recommendations and Follow-Up:

- After completing its investigation, a JPC submits a report with recommendations.
- The government is responsible for responding to these recommendations and reporting on any actions taken.
- The committee's findings and the government's responses are then discussed in Parliament.
- The recommendations made by the JPC are advisory and not mandatory for the government to follow.

6. Senior Advocates

Context:

The Supreme Court has designated 39 lawyers, including 10 women as senior advocates recently.

Senior Advocates:

- Section 16 of the Advocates Act, 1961 prescribes two different classes of advocates: senior advocates and other advocates.
- The designation of senior advocate is a mark of excellence to advocates who have distinguished themselves and have made a significant contribution to the development of the legal profession.
- It identifies advocates whose standing and achievements would justify an expectation that they can provide outstanding services as advocates in the best interest of the administration of justice.

Section 16 also states that senior advocates may be subject to certain additional restrictions.

- They are barred from filing a vakalatnama, appearing before a court without a junior or an advocate-on-record, doing drafting work, or directly accepting briefs for cases from clients.

Recommendation: The Chief Justice of India, along with any other Supreme Court judge, can recommend in writing the name of an advocate for the designation.

The new guidelines prescribe the minimum age as 45 years to apply for the 'senior advocate' designation.

- This age limit may, however, be relaxed by the Committee for Designation of Senior Advocates, the CJI, or a Supreme Court judge, if they have recommended an advocate's name.

Grading: Applicants for the designation are graded out of 100 marks.

7. Virtual Courts in India

Context:

The Kerala High Court recently launched a first-of-its-kind virtual court called '24x7 ON Courts — Open and Networked Courts' in Kollam district.

Virtual Courts in India

Concept and Purpose:

- Virtual Courts aim to eliminate the physical presence of litigants and lawyers in courtrooms.
- They facilitate the adjudication of cases on a virtual platform using Information and Communication Technology (ICT).
- The concept is designed to efficiently utilize court resources and provide litigants with an effective avenue to settle petty disputes.

Functionality:

- Virtual Courts can be administered by a judge over a virtual electronic platform, functioning 24/7.
- Communication and proceedings are conducted entirely in electronic form, including sentencing and payment of fines or compensation.

Current Implementation:

Virtual Courts are currently used for specific types of cases:

- Offences under the Motor Vehicle Act (e.g., traffic challans).

- Petty offences where summons can be issued under Section 206 of the Criminal Procedure Code.

The concept was particularly emphasised during the Coronavirus pandemic in 2020, when the Supreme Court of India directed all courts to extensively use video conferencing for judicial proceedings under Article 142 of the Constitution.

8. Election Commission of India

Context:

The Election Commission of India (ECI) has recently concluded the 18th Lok Sabha elections and announced dates for the Assembly polls in Jammu and Kashmir and Haryana, reaffirming its critical role in ensuring transparent, free, and fair elections across India.

About the Election Commission of India (ECI):

Constitutional foundation:

- **Permanent and independent body:** The Election Commission of India is a permanent and independent constitutional authority, established under Article 324 of the Indian Constitution.
- **Primary role:** ECI is responsible for conducting elections to the Parliament, state legislatures, and the offices of the President and Vice President of India.
- It does not oversee elections for urban local bodies like municipalities and panchayats, which the State Election Commissions manage.

Constitutional provisions:

- **Article 324** empowers the ECI to supervise, direct, and control the preparation of electoral rolls and the conduct of all elections to Parliament and state legislatures.
- Article 325 ensures no one is excluded from the electoral rolls based on religion, race, caste, or sex.
- Article 326 establishes adult suffrage (voting rights for all citizens aged 18 and above) as the basis for elections.

- Article 327 allows Parliament to make laws regarding elections to Parliament and state legislatures.
- Article 328 empowers state legislatures to make provisions related to elections within the state.
- Article 329 prohibits judicial interference in electoral matters.

Functions and jurisdiction:

- **Advisory role:** ECI advises the President or Governor on matters related to the disqualification of members of Parliament and state legislatures, especially in cases involving corrupt electoral practices.
- **Quasi-Judicial role:** ECI can disqualify candidates for failing to submit election expense accounts and resolve disputes regarding the recognition of political parties and the allocation of election symbols.
- **Administrative role:** ECI handles the delimitation of electoral constituencies, voter registration, updating of electoral rolls, and scheduling of election dates.
- It also ensures adherence to the Model Code of Conduct during elections and monitors political campaign expenditures.

Composition:

- **Structure:** Initially, ECI had only one member, the Chief Election Commissioner (CEC). In 1989, due to the reduction of the voting age from 21 to 18, two additional Election Commissioners were appointed, making it a three-member body.
- **Appointments:** The President of India appoints the Chief Election Commissioner and the two Election Commissioners. They serve for a term not exceeding six years or until the age of 65, whichever is earlier.



@RCREDDYIAS

For other months issues and updates
Join our telegram channel

Removal process: The Chief Election Commissioner can only be removed from office like that of a Supreme Court judge, requiring a special majority in both Houses of Parliament.

9. State Election Commission

Context:

The Election Commission of India (ECI), with its track record of conducting free and fair elections, and on time, to Parliament and State legislatures, has emerged as one of independent India's most credible institutions. Yet, there are 34 State Election Commissions (SECs) that need serious attention and strengthening.

About State Election Commission:

- **Autonomous Constitutional Authority:** Responsible for administering elections to the Local Self Government (LSG), which includes Panchayati Raj Institutions and Urban Local Bodies.
- **Establishment:** The State Election Commission (SECM) was established following the 73rd and 74th Constitutional Amendments in 1992.

Role and Functions:

- Article 243K (1): The superintendence, direction and control of the preparation of electoral rolls for, and the conduct of, all elections to the Panchayats shall be vested in a State Election Commission consisting of a State Election Commissioner to be appointed by the Governor.
- Article 243K (2): Subject to the provisions of any law made by the Legislature of a State the conditions of service and tenure of office of the State Election Commissioner shall be such as the Governor may by rule determine.
- **Election Supervision:** The SECM has the authority over elections to Urban & Rural Local Bodies.
- **Registration of Political Parties:** Empowered to register and deregister political parties in the state. Since 2005, it is mandatory for all political parties contesting local elections to register with SECM.

- Article 243K (2): The State Election Commissioner shall not be removed from his office except in like manner and on the like ground as a Judge of a High Court and the conditions of service of the State Election Commissioner shall not be varied to his disadvantage after his appointment.



R.C.REDDY
IAS STUDY CIRCLE



@RCREDDYIAS

**For other months issues and updates
Join our telegram channel**



R.C.REDDY
IAS STUDY CIRCLE

45+ Years Director's Experience | 35+ Years Institute's History

Current Affairs Test Series for CSE Prelims 2025 (offline/online)

Offline Test Locations : Himayat Nagar or Ashok Nagar Branch

13 Tests
(100 Qs Each), Total 1300 Qs
with Detailed Explanation PDFs

Covering Static Topics Based
on 13 months of CA :
(April 2024 to April 2025)

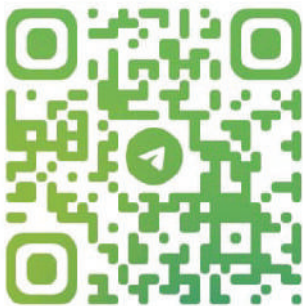
★ **Analysis by Faculty**
after each test

High - Quality MCQs

Covers Latest MCQ Patterns
based on PYQs

**CURRENT AFFAIRS TEST SERIES SCHEDULE
PLAN - 2024-25**

S.No.	Test Name	Date of Test
1	CA April 2024	18-08-2024
2	CA May 2024	01-09-2024
3	CA June 2024	15-09-2024
4	CA July 2024	29-09-2024
5	CA August 2024	13-10-2024
6	CA September 2024	27-10-2024
7	CA October 2024	17-11-2024
8	CA November 2024	15-12-2024
9	CA December 2024	12-01-2025
10	CA January 2025	16-02-2025
11	CA February 2025	16-03-2025
12	CA March 2025	13-04-2025
13	CA April 2025-20 Days	04-05-2025



Scan to Join our Telegram
Channel for more updates



Early bird discount
till 25th August
(4,720/- incl GST)



Scan for Schedule, Application
and Payment Form

WHATSAPP YOUR QUERIES TO



70756 52127

ECONOMY

1. US displaced the UAE to emerge as India's second largest supplier of liquefied natural gas

Context:

The US displaced the UAE to emerge as India's second largest supplier of liquefied natural gas (LNG) in 2023, accounting for 3.09 million tonnes (MT).

About

- LNG is emerging as a substitute fuel in the transition towards green energy.
- **The US also emerged as the world's largest LNG exporter in 2023.**
- It overtook Qatar and Australia with strong growth in liquefaction capacity due to investments made several years ago.
- Increased supply from the US can be attributed to the weakening LNG prices in international markets as well as India's proximity, via the Cape of Good Hope, to US LNG cargoes compared to North Asia.

Evolving Trade Dynamics:

- **India, the fourth largest LNG importer, scaled back in 2022 owing to rising prices and shipments from the US declined to 2.16 MT.**
- The UAE's share rose from 2.6 MT in 2019 to 3.32 MT in 2020, slipped to 2.59 MT in 2022 and again rose to 2.85 MT last year.
- **Qatar remained India's largest LNG supplier for five years running (2019-2023); cargoes topped 10 MT, barring in 2019 when it stood at 9.7 MT.**
- **Another notable development during this period is the decline in the share of African nations in India's LNG imports.**



@RCREDDYIAS

For other months issues and updates
Join our telegram channel

What is LNG?

- LNG stands for liquefied natural gas.
- It's natural gas that has been cooled down to about -260°F (-162°C) to turn it into a liquid form.
- This process reduces its volume by approximately 600 times, making it easier and more economical to transport and store, especially over long distances where pipelines aren't practical.
- LNG is primarily composed of methane (CH₄), but it can contain small amounts of other hydrocarbons.
- Once it reaches its destination, LNG is re-gasified and used just like conventional natural gas for heating, electricity generation, and as a fuel for vehicles.

2. India's seafood exports

Context:

India's seafood exports have increased from Rs. 46,662.85 Crore in 2019-20 to Rs. 61043.68 Crore in 2023-24 registering a growth of 30.81%.

About:

- **India is the third-largest fish and aquaculture-producing country.** It accounts for 7.96% of the total global fish production. The industry employs more than 28 million people in India.
- India mainly exports frozen shrimps, fish, cuttlefish, squids, dried items, and live and chilled items.
- **Out of these, frozen shrimp is the largest exported marine product contributing to more than 40% of the total quantity and about 67.22% of the total export value.**

Government Initiatives

- **Marine Products Export Development Authority (MPEDA):** It is a statutory organization that provides assistance for upgrading the infrastructure facilities for value addition, and providing technical assistance for aquaculture production meant for exports.
- The reduction in import duties on various ingredients /inputs for manufacture of prawn and shrimp feed/fish feed announced in Budget 2024-25 will make Indian seafood-based value-added products more competitive in international markets.
- **The Government has also increased the Remission of Duties and Taxes on Export Products (RoDTEP) from 2.5% to 3.1% for various seafood products.**
- **Pradhan Mantri Matsya Sampada Yojana (PMMSY):** It was implemented to bring the Blue Revolution through sustainable and responsible development of the fisheries sector in India for a period of five years, from FY 2020-21 to FY 2024-25.

3. Yen Carry Trade

Context:

Low rates incentivized global investors to borrow yen cheaply and invest in other countries for better returns.

About Yen Carry Trade:

- Investors borrow money in a country with low interest rates and invest it in countries with higher interest rates.
- Example: Borrowing yen (from Japan) with low rates and investing in countries like Brazil, Mexico, or India where rates are higher.

Bank of Japan's Policy: Between 2011 and 2016, Japan's interest rates were at zero, and since 2016, they have been even lower (-0.10%) to stimulate economic activity in Japan.

- From mid-March to July, the Bank of Japan raised rates from -0.10% to 0.25%.
- The increase in Japanese interest rates led to a stronger yen.

Impact: Investors who had borrowed yen and invested in other currencies started selling their international assets.

- The yen strengthened against other currencies like the US dollar, Brazilian real, Indian rupee, and Mexican peso.

4. Unified Payments Interface

Context:

Recently, the Reserve Bank of India (RBI) has taken a significant step to facilitate digital payments by increasing the transaction limit for tax payments through the Unified Payments Interface (UPI).

Key Points

- **Increased Limit:** The UPI transaction limit for tax payments has been raised from Rs 1 lakh to Rs 5 lakh per transaction. This move aims to make it easier for taxpayers to settle their dues using UPI.
- **Previous Changes:** It's worth noting that in December of last year, the RBI had already increased the UPI transaction limit to Rs 5 lakh (from Rs 1 lakh) specifically for payments related to hospitals and educational institutions.

Delegated Payments Feature: In addition to the increased limit, the RBI has proposed a new feature called "Delegated Payments" for UPI users.

- It allows a primary user (say, an account holder) to authorise another individual (a secondary user) to make UPI transactions from the primary user's bank account, up to a specified limit.
- Essentially, this means that parents can grant their children limited access to their accounts for daily expenses, even if the children don't have their own bank accounts or smartphones.

Unified Payments Interface (UPI):

- It is a system that powers multiple bank accounts into a single mobile application (of any participating bank), merging several banking features, seamless fund routing & merchant payments into one hood.

- **It was developed by National Payments Corporation of India (NPCI) in 2016.**
- **Participants in UPI:** Payer Payment Service Provider (PSP), Payee PSP, Remitter Bank, Beneficiary Bank, NPCI, Bank Account holders, and Merchants.
- **Indians can now use the Unified Payments Interface (UPI) to make payments in seven countries - Sri Lanka, Mauritius, France, UAE, Singapore, Bhutan, and Nepal.**

5. Pradhan Mantri JI-VAN Yojana

Context:

Cabinet recently approves an amendment in Pradhan Mantri JI-VAN Yojana for providing financial support to Advanced Biofuel Projects.

About Pradhan Mantri JI-VAN (Jaiv Indhan- Vatavaran Anukool fasal awashesh Nivaran) Yojana:

- **It is a scheme aimed at promoting the production of cellulosic ethanol or 2nd-generation (2G) bioethanol from lignocellulosic biomass and another renewable feedstock.**
- Lignocellulosic biomass (LCB) is a heterogeneous polymeric material that is made up of carbohydrates, lignin, and other components.
- Launched in – 2019.
- Timeline – 5 years. (recently extended up to 2028-29).
- Implemented by - Centre for High Technology (CHT), a technical body under the aegis of Ministry of Petroleum and Natural Gas.

Objectives:

- **Establishing commercially viable projects for 2G ethanol production,**
- Providing farmers with a direct income source from their agricultural waste, and
- Addressing environmental pollution concerns.
- The initiative is supported financially through Viability Gap Funding (VGF).

- The ethanol produced by the scheme beneficiaries will be mandatorily supplied to Oil Marketing Companies (OMCs) to benefit under the Ethanol Blending Programme (EBP).

Recent amendments:

- **The modified scheme extends timeline for implementation of scheme by 5 years i.e. till 2028-29 and includes advanced biofuels produced from lignocellulosic feedstocks.**
- **Bolt-on plants & Brownfield projects would also now be eligible to leverage their experience and improve their viability.**
- To promote multiple technologies and multiple feedstocks, preference would now be given to project proposals with new technologies and innovations in the sector.

6. Overnight Index Swap

Context:

Recently, the Deputy Governor of the Reserve Bank of India (RBI) said that RBI has been reviewing the investment limit for foreign investors in the overnight index swap (OIS) market.

About Overnight Index Swap:

- **It is a derivative instrument where returns under a fixed rate asset are swapped against a pre-determined published index of a daily overnight reference rate for an agreed period of time.**
- **Purpose:** The primary purpose of an OIS is to manage interest rate risk, particularly the risk associated with fluctuations in the overnight lending rate.
- An overnight index swap rate is calculated each day.
- This interest rate is based on the average interest rate institutions with loans based on the overnight rate have paid for that day.

How does an OIS work?

- These are instruments that allow financial institutions to swap the interest rates they are paying without having to refinance or change the terms of their existing loan.
- **When two financial institutions create an overnight index swap, one of the institutions is swapping an overnight (floating) interest rate and the other institution is swapping a fixed short-term interest rate.**
- To get the swap rolling, both the firms would agree to continue servicing their loans, but at the end of a specified time period whoever ends up paying less interest will make up the difference to the other firm.

7. Grain ATM**Context:**

The Odisha government recently piloted a Grain ATM in the city, the first-of-its-kind in the state, to dispense ration through automated teller machines to beneficiaries covered under the national food security programme.

About Grain ATM (Annapurti):

- It is an automated multi-commodity dispensing solution that provides fast, clean, and precise access to commodities (rice, wheat, or grains) to beneficiaries, post biometric authentication.
- It functions like regular bank ATM machines.
- **It is developed by World Food Programme (WFP) India.**
- It ensures 24x7 access to full entitlements for people entitled to monthly subsidised grains through India's Public Distribution System.

Function:

- Grain ATM is installed with a biometric system and a touch screen.
- The beneficiaries will be required to enter their Ration Card or Aadhar Card number.
- After successful biometric authentication, the machine will dispense the grains in the bags installed under the machine.

India's first Grain ATM has been installed as a pilot project in Farrukhnagar, Gurugram under the 'World Food Programme' of the United Nations (UN).

India's first round-the-clock grain ATM was opened at Mancheswar in Bhubaneswar, Odisha.

8. Tantalum**Context:**

The Central Government recently notified a list of 24 minerals, including Tantalum, in Part D of the First Schedule of the Mines and Minerals (Development and Regulation) Act (MMDR) Act, 1957, as Critical and Strategic minerals.

About Tantalum:

- It is a rare metal with symbol Ta and atomic number 73.
- **Occurrence:** Raw tantalum rarely occurs in nature. Instead, it is typically found in the ore columbite-tantalite (usually referred to as coltan).
- **Major Producers: Democratic Republic of the Congo, Rwanda, Brazil, and Nigeria.**

Properties:

- Classified as a transition metal, Tantalum is a solid at room temperature.
- It is a shiny, silvery metal which is soft when it is pure.
- **It is almost immune to chemical attack at temperatures below 150-degree Celsius.**
- Tantalum is virtually resistant to corrosion due to an oxide film on its surface.
- When pure, tantalum is ductile, meaning it can be stretched, pulled, or drawn into a thin wire or thread without breaking.



@RCREDDYIAS

For other months issues and updates
Join our telegram channel

- It belongs to a class of metals known as refractory metals, which are defined by their strong resistance to heat and wear.
- It has an extremely high melting point, exceeded only by tungsten and rhenium.

Applications:

- It is most prominently used in the electronics sector.
- The capacitors made from tantalum are capable of storing more electricity in smaller sizes without much leakage than any other type of capacitor.
- This makes them ideal for use in portable electronic devices such as smartphones, laptops, and digital cameras.
- As tantalum has a high melting point, it is frequently used as a substitute for platinum, which is more expensive.
- It is also used to make components for chemical plants, nuclear power plants, aeroplanes, and missiles.
- It does not react with bodily fluids and is used to make surgical equipment and implants, like artificial joints.
- A composite consisting of tantalum carbide (TaC) and graphite is one of the hardest materials known and is used on the cutting edges of high-speed machine tools.

9. Green Tug Transition Program

Context:

The Union Minister of Port Shipping and Waterways, launched the Standard operating procedure (SOP) for Green Tug Transition Program (GTTP) in New Delhi.

About Green Tug Transition Program:

- GTTP was launched on May 22, 2023, is a key initiative under the 'Panch Karma Sankalp'.
- It is designed to phase out conventional fuel-based harbour tugs operating in Indian Major Ports and replace them with green tugs powered by cleaner and more sustainable alternative fuels.

Implementation phases

- Phase 1 of the GTTP will begin on October 1, 2024, and continue until December 31, 2027.
- During this phase, four Major Ports — Jawaharlal Nehru Port Authority, Deendayal Port Authority, Paradip Port Authority, and V.O. Chidambaranar Port Authority will procure or charter at least two green tugs each, based on standardized designs and specifications issued by the Standing Specification Committee (SSC).

Nodal Agency: National Centre of Excellence in Green Port & Shipping (NCoEGPS) will act as the nodal entity for this programme.

India aims at becoming a 'Global Hub for Green Ship' building by 2030 with the launch of the Green Tug Transition Programme (GTTP).

'Green Hybrid Tugs' will be powered by Green Hybrid Propulsion systems. These Green hybrid tugs will subsequently adopt non-fossil fuel solutions like (Methanol, Ammonia, and Hydrogen).

10. Open Market Sale Scheme

Context:

The Union government has announced that the States can directly purchase rice from the Food Corporation of India (FCI) under the Open Market Sale Scheme (Domestic) without participating in e-auction.

About:

- The States wanted to procure more rice over the stipulated five kg of free grain per individual under the Pradhan Mantri Garib Kalyan Anna Yojana (PMGKAY); they can procure it for ₹2,800 per quintal (excluding transportation cost).

What is the Open Market Sale Scheme (OMSS)?

- Under the Open Market Sale Scheme, the FCI from time to time sells surplus food grains from the central pool especially wheat and rice in the open market to traders, bulk consumers, retail chains and so on at predetermined prices.
- FCI does this through e-auctions where open market bidders can buy specified quantities at the prices set at the start of a cycle and revised routinely.

- Usually, states are also allowed to procure food grains through the OMSS without participating in the auctions, for their needs beyond what they get from the central pool to distribute to National Food Security Act, 2013 beneficiaries.

FCI discontinued the sale of grains to states:

- In June 2023, the Union government stopped the sale of rice and wheat from the Central pool under the OMSS to state governments.
- It also disallowed private bidders to sell their OMSS supplies to state governments.

Food Corporation of India (FCI):

FCI was setup under the Food Corporations Act 1964, in order to fulfil following objectives of the Food Policy:

- Effective price support operations for safeguarding the interests of the farmers.
- Distribution of foodgrains throughout the country for a public distribution system.
- Maintaining a satisfactory level of operational and buffer stocks of foodgrains to ensure National Food Security Since its inception.

FCI has played a significant role in India's success in transforming the crisis management-oriented food security into a stable security system.

11. Bhu-Aadhar or ULPIN

Context:

Comprehensive digitisation of land records for both rural and urban areas was announced in the Union Budget 2024.

About Bhu-Aadhar or ULPIN:

- Unique Land Parcel Identification Number (ULPIN) is part of the Digital India Land Records Modernization Programme (DILRMP).
- It is a 14-digit identification number accorded to a land parcel based on the longitude and latitude coordinates of the land parcel and depends on detailed surveys and geo-referenced cadastral maps.
- ULPIN is a Single, Authoritative Source of Truth for information on any parcel of land or property to provide Integrated Land Services to the citizens as well as all stakeholders.

- The Unique Land Parcel Identification Number (ULPIN) system is based on an international standard which complies with Electronic Commerce Code Management Association (ECCMA) standard and Open Geospatial Consortium (OGC) standard.

Generation of ULPIN:

- There is a formula to generate and assign ECCMA (Electronic Commerce Code Management Association) Standard prescribed 14-digit Unique ID "Property Natural Identifier Unit" (PNIU) using the parcel Geo Referenced coordinate of vertices

This computationally generated Unique ID would be organically dependent on Parcel vertices expressed in Lat/Long coordinates "property Natural Identifier Lot" (PNIL) and Unique ID (PNIU) would spatially be pointing to the surface of the parcel.

12. National Coal Index

Context:

The National Coal Index (NCI) has shown a significant decline of 3.48 percent in June 2024 at 142.13 points on a provisional basis compared to 147.25 points in June 2023.

About National Coal Index (NCI):

- The NCI is a price index which reflects the change in the price level of coal in a particular month relative to the fixed base year.
- NCI combines the prices of coal from all the sales channels-Notified Prices, Auction Prices, and Import Prices.
- It has been rolled out on 4th June 2020, and the aim is to have an index that will truly reflect the market price.
- The concept and design of the index as well as the representative prices have been developed by the Indian Statistical Institute, Kolkata.
- It is released every month by the Ministry of Coal.
- The base year is FY 2017-18.
- The index is meant to encompass all transactions of raw coal in the Indian market.

- *This includes coking and non-coking of various grades transacted in the regulated (power and fertilizer) and non-regulated sectors.*
- *Washed coal and coal products are not included.*
- The NCI's upward movement indicates rising demand for coal, which will encourage coal producers to take maximum benefit by further scaling-up domestic coal production to meet the growing energy demands.
- The downward trajectory of the NCI signifies a more equitable market, harmonizing supply and demand dynamics.

13. Multidimensional Vulnerability Index

Context:

Recently, the UN General Assembly officially launched a new data-driven "vulnerability" index that would help small island states and developing nations gain access to low-interest financing.

About Multidimensional Vulnerability Index:

- It is a new international quantitative benchmark to measure structural vulnerability and the lack of structural resilience across multiple dimensions of sustainable development at the national level.
- It is set to act as a complement to Gross Domestic Product (GDP) and other development metrics.
- **Aim:** It aims to capture exogenous vulnerabilities and lack of resilience to exogenous shocks of all developing countries, so as to ensure credibility and comparability.



@RCREDDYIAS

**For other months issues and updates
Join our telegram channel**

Background

- Since the 1990s, small island developing states (SIDS) that are not poor enough in terms of GDP per capita to access low-interest development financing but nonetheless face vulnerability to external shocks like climate change have been calling for such a measure.
- It incorporates indicators linked to a state's structural vulnerabilities and lack of economic, environmental and social resilience.
- These factors include- *import dependency, exposure to extreme weather events and pandemics, impacts of regional violence, refugees, demographic pressure, water and arable land resources and mortality of children under five.*
- **Significance:** It is a vital tool to help Small Island nations gain access to the concessional financing that they need to survive the climate catastrophe, to improve their long-term national planning, service their debts, and sign up to insurance and compensation schemes that may be their last hope when the waters rise.

14. Predatory Pricing

Context:

TAKING AIM at the world's biggest e-tailer Amazon, Union Commerce and Industry Minister Piyush Goyal Wednesday expressed concern over the surge in growth in e-commerce business, and said it could be the result of "predatory pricing".

About:

- *Predatory pricing is the practice of setting prices below cost with the intention of driving competitors out of the market and later raising prices to recover losses and make huge profits.*
- e-Commerce platforms like Amazon are accused of practicing predatory pricing in India.

Problem with Predatory Pricing:

- **ASYMMETRIC REPERCUSSIONS:** The consumers may get benefit from the decreased prices but on the same hand it has affected the livelihoods of millions of brick-and-mortar shops that buy the product at a limited margin and sell with marginal profit.

- **WIDENS SOCIAL DISPARITIES:** Access to the capital with Multi-National Companies like Amazon and Shopee puts them in the front seat in buying products at large scale which further causes deepening the gap.
- **ANTI-COMPETITIVE:** Recently, many distributors in Maharashtra alleged unfair treatment by Colgate with respect to Business-to-Business Companies like Jiomart which buys the same toothpaste at 30% less price for what is being paid by Distributors. This makes the market anti-competitive.

To restrict this practice, E-Commerce Rules 2021 have put a ban on Flash Sales or back-to-back sales to create a level playing field. The Rules also mandate that none of the related parties are allowed to use any consumer information for unfair advantage.

In 2019, the Competition Commission of India held Google guilty of misuse of its dominant position in the search engine marketplace.

Under the Indian jurisprudence, Anti-Trust laws consider predatory pricing as discriminative and unfair under section 4 of the CCI Act, 2002. Strengthening the laws will not only prevent predacious pricing but will create a conducive environment for the business ecosystem.

15. Fiscal Reduction and Management (FRBM) Act 2003

Context:

For two decades, India's fiscal discipline has been governed by deficit targets. Now it plans to manage the deficit in relation to borrowing targets, as many other countries are doing.

Fiscal Reduction and Management (FRBM) Act 2003:

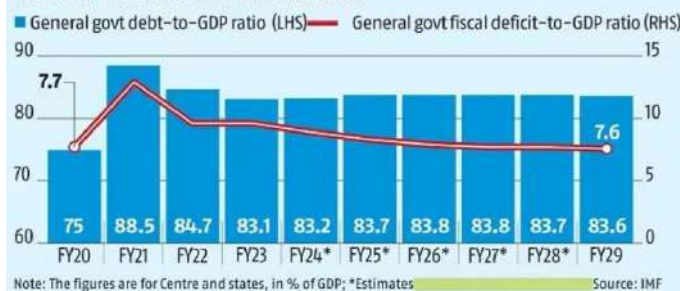
- It aims to establish financial discipline, improve the management of public funds, and reduce fiscal deficits.

Target:

- The act requires reducing the fiscal deficit by 3% of the GDP by March 31, 2023.
- Since the Fiscal Responsibility and Budget Management (FRBM) Act came into effect in 2004, this target has been achieved only once.
- Debt of central Govt: 40% of the GDP by 2024-25.

- From 2026-27, the fiscal deficit will be managed not with a fixed target, but in a way that ensures a declining debt-to-GDP ratio.
- India's Debt to GDP ratio has not continuously increased for the last 5 years.

WHAT THE NUMBERS SAY



16. Census

Context:

India's census, an annual decadal exercise, is likely to kick off in September 2024.

About Census:

- Census is the basis for reviewing the country's progress in the past decade, monitoring the ongoing schemes of the government and planning for the future.
- Census 2011 was the 15th National Census of the country since 1872 and the 7th after Independence.

It was conducted in two phases which are:

- House Listing or Housing Census
- Population Enumeration

Census process:

Questions and forms: Census data is taken by visiting each and every household and gathering particulars by asking questions and filling up census forms.

As per the Section 15 of the Census Act, 1948, no person shall have a right to inspect any book, register or record made by a census-officer in the discharge of his duty as such, or any schedule delivered under section 10.

- **And notwithstanding anything to the contrary in the Indian Evidence Act, 1872, no entry in any such book, register, record or schedule shall be admissible as evidence in any civil proceeding whatsoever or in any criminal proceeding other than a prosecution under this Act or any other law for any act or omission which constitutes an offence under this Act.**

Transportation to data processing centres: The forms are transported to data processing centres located at 15 cities across the country.

Intelligent Character Recognition Software (ICR): This technology came in India in Census 2001 and has become the benchmark for censuses all around the globe.

Scanning and extraction of data: This involves the scanning of the census forms at high speed and extracting the data automatically using computer software

- **The population census is a Union subject under Article 246 of India Constitution.**
- It is listed at serial number 69 of the seventh schedule of the constitution.

17. Green Shoots

Context:

The green shoots of a recovery have started to appear in the first six months of this calendar year, with niche verticals starting to draw investor interest, according to India's startup sector.

About Green Shoots:

- **"Green shoots" is a term used to describe signs of economic recovery or positive data during an economic downturn.**
- **The term "green shoots" is a reference to plant growth and recovery, when plants start to show signs of health and life, and, therefore, has been employed as a metaphor for a recovering economy.**
- The term was first used by UK chancellor Norman Lamont to refer to economic growth during the economic downturn in the United Kingdom in 1991.
- Particularly after a recession, green shoots are welcome as symbols of the fact that the economy is slowly treading the path upward.

- While there is no consensus on what exactly constitutes green shoots, the improvement in industrial production figures, rise in car sales, developments in the infrastructure sector, including the steadying of prices of cement and steel, have been seen as green shoots.

18. PM-WANI Scheme

Context:

TRAI has proposed a reduction in broadband rates for Public Data Offices (PDOs) under the PM-WANI scheme to make internet access more affordable and boost the program's success.

About PM-WANI Scheme:

- **Launch: Initiated by the Department of Telecommunications (DoT) in December 2020.**
- **Objective: To provide affordable, high-speed internet connectivity, particularly in rural and remote areas, through a nationwide public Wi-Fi network.**

PM-WANI Ecosystem Components:

- **Public Data Office (PDO):** **Sets up Wi-Fi hotspots and provides internet access. No license is required from DoT.**
- **Public Data Office Aggregator (PDOA):** Offers authorization, accounting services, and user interfaces for purchasing data plans and monitoring usage.
- **App Provider:** Develops applications to help users locate and connect to nearby PM-WANI hotspots, facilitating easy internet access.
- **Central Registry:** Managed by the Centre for Development of Telematics, maintaining records of App Providers, PDOs, and PDOAs.

Accessing PM-WANI Wi-Fi:

- Users download an app to find available PM-WANI hotspots.
- They can select a network, pay for the service, and access the internet until their balance runs out.

- **Background:** The Prime Minister Wi-Fi Access Network Interface (PM-WANI) scheme was launched in 2020 which aims to democratise broadband access via public Wi-Fi hotspots.
- However, the program has faced challenges due to the high cost of connectivity charged by Telecom Service Providers (TSPs) and Internet Service Providers (ISPs).

Current tariff issues:

- PDOs have been charged up to ₹8 lakh annually for Internet leased lines, making the project economically unviable.
- In contrast, personal broadband connections are available at rates as low as ₹300-400 per month.
- TRAI's Solution: Proposed tariffs for PDOs under the PM-WANI scheme should be aligned with retail broadband (FTTH) rates to support small-scale PDOs like local shops, kiranawalas, and storekeepers.
- TRAI plans to review the proposed tariff arrangement after two years, based on the scheme's progress.

Targets vs. Reality:

- As of July 2024, there are 207,642 deployed PM-WANI Wi-Fi hotspots, far below the National Digital Communications Policy 2018 target of 5 million by 2020.
- For Digital India 2030, the target is set at 50 million public Wi-Fi hotspots.
- The average daily data usage per hotspot has dropped significantly, highlighting the need for tariff rationalization.



@RCREDDYIAS

**For other months issues and updates
Join our telegram channel**

19. Unified Pension Scheme**Context:**

Recently, the government introduced the Unified Pension Scheme (UPS), effectively reversing a 21-year-old reform of India's civil services pension system initiated by the Atal Bihari Vajpayee government.

About the Unified Pension Scheme:

- The Unified Pension Scheme (UPS) was introduced by the government on August 24, 2024, replacing the 21-year-old National Pension System (NPS) with a structure closely resembling the Old Pension Scheme (OPS).

Key Features of the Unified Pension Scheme:

- **Guaranteed pension: The UPS promises government employees 50% of their last drawn pay as a lifelong monthly pension.**
- **Dearness relief:** The pension includes a periodic dearness relief hike in line with inflation trends.
- **Family pension: In the event of a government employee's death, the family is assured a pension equivalent to 60% of the employee's pension.**
- **Superannuation payout:** A lump sum payment in addition to gratuity benefits will be provided at the time of retirement.
- **Minimum pension: A minimum pension of ₹10,000 per month is assured for those who complete at least 10 years of central government service.**

Contributions under the UPS:**The scheme is contributory, requiring:**

- **Employees to contribute 10% of their salary.**
- **The government is to contribute 18.5% of the salary.**

The government's contribution may be adjusted based on periodic actuarial assessments to ensure the scheme's sustainability.

Transition from NPS to UPS:

- **National Pension System (NPS):** Originally implemented for employees joining on or after January 1, 2004, the NPS linked pension payouts to the accumulated contributions from both the government and employees, invested in market-linked securities.
- **Switch option:** Employees who joined after 2004, including retirees, have the option to switch from NPS to UPS, which is expected to be beneficial for approximately 99% of NPS members.

20. Agriculture Infrastructure Fund**Context:**

The Union Cabinet approved the progressive expansion in the Central Sector Scheme of financing facility under 'Agriculture Infrastructure Fund' to make it more attractive, impactful and inclusive.

About Agriculture Infrastructure Fund (AIF):

- The key objective of the scheme is to mobilize a medium to long term debt financing facility for investment in viable projects for post-harvest management infrastructure and community farming assets through incentives and financial support in order to improve agriculture infrastructure in the country.
- It is a Central Sector Scheme.
- **Duration:** The Scheme will be operational from 2020-21 to 2032-33. Loan disbursement under the scheme will complete in six years, i.e. by the end of Financial Year 2025-26.
- All loans up to a limit of ₹ 2 crores under this financing facility will have interest subvention of 3% per annum. This subvention will be available for a maximum period of 7 years.

Benefits:

- Improved marketing infrastructure to allow farmers to sell directly to a larger base of consumers and hence, increase value realization for the farmers.
- This will improve the overall income of farmers.

- With investments in logistics infrastructure, farmers will be able to sell in the market with reduced post-harvest losses and a smaller number of intermediaries.
- This further will make farmers independent and improve access to market.
- With modern packaging and cold storage system access, farmers will be able to further decide when to sell in the market and improve realization.
- Community farming assets for improved productivity and optimization of inputs will result in substantial savings to farmers.

21. ULI Platform**Context:**

RBI Governor Shaktikanta Das said the pilot of a technology platform which enables frictionless credit is now proposed to be called the 'Unified Lending Interface' (ULI). ULI is a further step on the journey of digitalisation of banking services.

About ULI Platform:

- **ULI Platform:** It will facilitate a seamless and consent-based flow of digital information, including land records of various states, from multiple data service providers to lenders.
- Integration with Multiple Platform: The ULI platform integrates seamlessly with various financial databases and digital infrastructure, allowing lenders to access a borrower's financial information in real time.
- Quicker Process: This integration facilitates quicker credit assessments, reduces the need for physical documentation, and speeds up the loan approval process.

22. Criteria for grant of Navratna status to CPSEs**Context:**

Solar Energy Corporation of India Ltd (SECI), a Central Public Sector Enterprise (CPSE) under the Ministry of New and Renewable Energy has been granted the Navratna status by the Ministry of Finance.

About Criteria for grant of Navratna status to CPSEs:

The CPSEs which are Miniratna I, Schedule 'A' and have obtained 'excellent' or 'very good' MOU rating in three of the last five years.

CPSEs should have a composite score of 60 or above in following six selected performance indicators are eligible to be considered for grant of Navratna status.

- Net Profit to Net worth- 25
- Manpower Cost to total Cost of Production or Cost of Services- 15
- PBDIT to Capital employed- 15
- PBIT to Turnover- 15
- Earnings Per Share- 10
- Inter Sectoral Performance- 20

(Maximum Weight) = 100

Criteria for grant of Miniratna status to CPSEs:

- **Miniratna Category-I status:** The CPSEs which have made profit in the last three years continuously, pre-tax profit is Rs.30 crores or more in at least one of the three years and have a positive net worth are eligible to be considered for grant of Miniratna-I status.
- **Miniratna Category-II status:** The CPSEs which have made profit for the last three years continuously and have a positive net worth are eligible to be considered for grant of Miniratna-II status.

23. Index of Core Industries

Context:

Output from India's eight core sectors grew 6.1% in July, rebounding from a blip in June when growth had slid to a five-month low of 5.1%, as per data released by the Commerce and Industry Ministry recently.

About Index of Core Industries (ICI):

- **ICI comprises 40.27% of the weight of items included in the Index of Industrial Production (IIP).**
- **The eight core sector industries in decreasing order of their weightage: Refinery Products > Electricity > Steel > Coal > Crude Oil > Natural Gas > Cement > Fertilisers.**
- **ICI is published monthly with the base year as 2011-12.**
- **Published by: The Index of Eight Core Industries (ICI) is prepared every month and released by the Office of the Economic Adviser (OEA), Department for Promotion of Industry and Internal Trade (DPIIT), and Ministry of Commerce & Industry.**



@RCREDDYIAS

**For other months issues and updates
Join our telegram channel**



R.C.REDDY
IAS STUDY CIRCLE

45+ Years Director's Experience | 35+ Years Institute's History

Current Affairs Test Series for CSE Prelims 2025 (offline/online)

Offline Test Locations : Himayat Nagar or Ashok Nagar Branch

13 Tests
(100 Qs Each), Total 1300 Qs
with Detailed Explanation PDFs

Covering Static Topics Based
on 13 months of CA :
(April 2024 to April 2025)

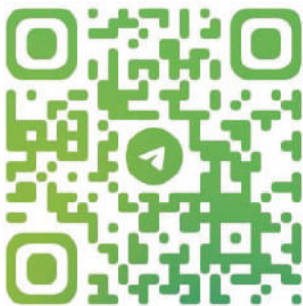
★ **Analysis by Faculty**
after each test

High - Quality MCQs

Covers Latest MCQ Patterns
based on PYQs

**CURRENT AFFAIRS TEST SERIES SCHEDULE
PLAN - 2024-25**

S.No.	Test Name	Date of Test
1	CA April 2024	18-08-2024
2	CA May 2024	01-09-2024
3	CA June 2024	15-09-2024
4	CA July 2024	29-09-2024
5	CA August 2024	13-10-2024
6	CA September 2024	27-10-2024
7	CA October 2024	17-11-2024
8	CA November 2024	15-12-2024
9	CA December 2024	12-01-2025
10	CA January 2025	16-02-2025
11	CA February 2025	16-03-2025
12	CA March 2025	13-04-2025
13	CA April 2025-20 Days	04-05-2025



Scan to Join our Telegram
Channel for more updates



Early bird discount
till 25th August
(4,720/- incl GST)



Scan for Schedule, Application
and Payment Form

WHATSAPP YOUR QUERIES TO



70756 52127

GEOGRAPHY

1. Mozambique

Context:

The shipments of Tur/Pigeon peas from Nacala Port in Mozambique, disrupted by an “anti-India” group, have resumed after the Ministry of Consumer Affairs raised the issue with the Ministry of External Affairs.

About Mozambique:

- **Location:** It is a country in Southern Africa and is located in the Southern and Eastern Hemispheres of the Earth.
- The country also has a coastline on the Indian Ocean to the east.
- The island countries and territories of Madagascar, Comoros, and Mayotte are separated from Mozambique by the Mozambique Channel.
- **Bordering countries: Zimbabwe, Eswatini, South Africa, Zambia, Malawi, and Tanzania.**
- **Rivers:** It is drained by several significant rivers, with the Zambezi being the largest and other rivers are Limpopo, Licungo, Lurio, Rovuma etc.
- **Major Lakes:** Lake Malawi (Nyasa) is the country's major lake.
- **Highest Peak:** Mount Binga
- **Capital:** Maputo is the country's capital while the largest city is Matola.
- **Natural Resources:** The country's principal natural resources are natural gas, coal, mineral, sand, hydropower, and most likely oil.



@RCREDDYIAS

For other months issues and updates
Join our telegram channel



2. La Nina

Context:

The Indian National Centre for Ocean Information Services (INCOIS) has revised the outlook for the probability of 'La Nina' weather conditions in the Pacific Ocean.

About

- The development of La Niña is said to be high in September to January (50-70%) with a possibility to peak in November (70%).

What is La Nina?

- **La Niña is the opposite of El Niño. La Niña causes cooler than average sea surface temperature (SST) in the equatorial Pacific region.**
- **Trade winds are stronger than usual, pushing warmer water towards Asia.**
- **Impact: This leads to drier conditions in the Southern U.S., and heavy rainfall in Canada. It has also been associated with heavy floods in Australia.**

How does it affect the Indian Monsoon?

- In El Niño years, India faces warmer temperatures and less rainfall, causing droughts in some regions.

- This affects agriculture, water resources, and ecosystems.
- The El Nino phenomenon led to 1.4% decrease in food grain production for the 2023-24 (July-June) crop year.
- La Niña brings cooler sea surface temperatures, leading to increased rainfall in certain parts of India.

3. Beas River

Context:

Visuals from Himachal Pradesh showed the Beas River flowing to the brim as heavy rains continued to lash the Himalayan state.

About Beas River:

- It is a river in Himachal Pradesh and Punjab states, northwestern India.
- It is one of the five rivers that give the Punjab ("Five Rivers") its name.
- The Beas River was the approximate eastern limit of Alexander the Great's invasion of India in 326 BC.

Course:

- It rises at an elevation of 14,308 feet (4,361 metres) at Rohtang Pass in the western Himalayas, in central Himachal Pradesh.
- From there it flows south through the Kullu Valley, receiving tributaries from the flanking mountains, and then turns west to flow past Mandi into the Kangra Valley.
- After crossing the valley, the Beas enters Punjab state and veers south and then southwest to its confluence with the Sutlej River at Harike.
- Its total length is 470 kilometres (290 mi), and its drainage basin is 20,303 square kilometres (7,839 sq mi) large.
- Major Tributaries: The major tributaries of the Beas River are Bain, Banganga, Luni, and Uhal, along with Banner, Chakki, Gaj, Harla, Mamuni, Parvati, Patlikuhlal, Sainj, Suketi, and Tirthan.

- The Beas forms the world-famous valleys of Kullu and Kangra.

4. Ol Doi Nyong Lengai Volcano

About Ol Doi Nyong Lengai Volcano:

- Location: It is located in northern Tanzania, at the southern end of Lake Natron.
- It is known to the local Maasai people as the "Mountain of God."
- It is an active stratovolcano with unique geological characteristics.
- It rises to an elevation of 9,442 feet (2,878 metres) and is one of the many volcanoes situated along the East African Rift System.
- It contains basalts rich in sodium and potassium, and is so alkaline that its lavas resemble washing soda.
- The volcano has more than one active centre and most of the recent eruptions were from its northern crater.
- Why is it a rare volcano? This volcano is the only one existing on Earth which has an actively erupting and extremely runny carbonatite magma. The magma is saturated with alkali elements, like calcium and sodium and is poor in silica.

Details of the study:

- As per the new study, the crater's upper slopes have started sinking since 2013 and the likely cause for this sinking volcano was the deflating magma reservoir, which is located 3,300 feet (1,000 m) under the volcano.



@RCREDDYIAS

For other months issues and updates
Join our telegram channel

5. Location of Russia

Context:

India's Russian oil imports in July accounted for as much as 43 percent of India's total oil imports of 4.82 million barrels per day (bpd).

About:

- India is the world's third-largest consumer of crude oil with a high import dependency level of over 85 percent.
- Russia's share is almost as much as the cumulative market share of the next four large suppliers—Iraq, Saudi Arabia, the United Arab Emirates (UAE), and the United States (US).
- India's second and third largest source for crude oil is Iraq and Saudi Arabia.

Russia is bounded to the north and east by the Arctic and Pacific oceans, and it has small frontages in the northwest on the Baltic Sea at St. Petersburg and at the detached Russian oblast (region) of Kaliningrad (a part of what was once East Prussia annexed in 1945), which also abuts Poland and Lithuania.

To the south, Russia borders North Korea, China, Mongolia, and Kazakhstan, Azerbaijan, and Georgia.

To the southwest and west, it borders Ukraine, Belarus, Latvia, and Estonia, as well as Finland and Norway.



6. Atmospheric Rivers

Context:

Atmospheric rivers are invisible to the naked eye but are growing in intensity over India and can be linked with high rainfall, devastating floods, and heat stress in India.

About Atmospheric Rivers (ARs):

- An atmospheric river is a plume of moisture, or water vapour, that moves from the tropics and is dumped over a region as heavy rain or snow.
- Atmospheric rivers are narrow bands that tend to occur on the eastern side of strong mid-latitude storms.
- These are pole-bound (from tropics towards pole) streams of water vapour fed by the warming oceans in the tropics.
- As they travel north, they are propelled by strong winds and bring heavy rainfall to areas in their path.
- ARs can sometimes carry many times the volume of moisture and flow at a higher speed than some of the world's major rivers.
- They hover much closer to land than the dry jet streams and pick up moisture moving over the vast, warm oceans, which they shed while traversing over land.
- They can significantly alter the microclimate of places it moves through, stuffing the air with water vapour, increasing wind speeds and causing violent showers.

7. Pyrocumulonimbus Clouds

Context:

The wildfires currently raging in the United States and Canada are so intense that they have created 'pyrocumulonimbus' clouds, which have the potential to spit out thunder and spark more fires.

About Pyrocumulonimbus Clouds:

- Pyrocumulonimbus clouds form when intense heat from a wildfire or volcanic eruption causes air to rise rapidly. As the air ascends, it carries water vapour, smoke, and ash.

- The water vapour cools and condenses around the ash particles, forming a cloud.
- If the upward movement is strong enough and there is sufficient water vapour, the cloud can develop into a pyrocumulonimbus cloud.

Characteristics:

- These clouds are known for their towering heights, sometimes reaching up to 50,000 feet. They can generate their own weather systems, including thunderstorms, due to the intense convection currents created by the heat.
- Despite their ability to produce thunderstorms, they usually do not generate significant rainfall.

Impact on Wildfires:

- Pyrocumulonimbus clouds can exacerbate wildfire situations. The lightning they produce can ignite new fires far from the original blaze.
- Additionally, the strong winds associated with these clouds can spread existing fires more rapidly and unpredictably.

8. Lake Turkana

Context:

Recently, Lake Turkana was comprehensively surveyed by a team of scientists.

About Lake Turkana:

- **Location:** It is located in the remote northern region of Kenya.
- It lies in the Eastern Rift Valley with its far northern end extending to Ethiopia.
- Three rivers, including Omo, Turkwel, and Kerio flow into the lake, but only the Omo River is perennial, contributing 90 percent of the inflow of water each year.
- It stands as Africa's fourth-largest lake and the largest permanent desert lake in the world.

- It is designated as the UNESCO World Heritage site and is renowned for its unique biodiversity and cultural significance.
- It is lying in a hot, arid, and remote region, and provides resources for communities on the lakeshore and surrounding areas.
- The estimated population of the Turkana region is approximately 1 million people, whose livelihoods are based on pastoralism, fishing, and, to a lesser extent, crop farming.
- **Issues:** Its semi-saline waters, driven by high evaporation rates and fluctuating lake levels of up to 8 meters per decade, have historically hindered sustainable development initiatives.

Lake Urmia (Iran) - Once one of the largest saltwater lakes in the world, it has faced significant shrinkage due to environmental issues.

Lake Van (Turkey) - The largest lake in Turkey, known for its saline water and surrounding volcanic landscape.

Lake Oahe (United States) - A large reservoir on the Missouri River, crucial for water supply and hydroelectric power.

9. Places in news

Context:

A state of emergency has been declared in Kursk following a Ukrainian incursion into the Russian border region.

Places in news	Located in
1. Kursk	Russia
2. Yakutsk	Russia
3. Rotorua	New Zealand
4. Timbuktu	Mali

About Kursk Region:

- Kursk is a city and administrative centre of Kursk oblast (region) located on the south-western border of Russia.
- It is situated in the centre of the European part of Russia.

- It lies along the upper Seym River, about 450 km south of Moscow.
- It is located in the area known as the Black Earth territory due to its fertile soil.

History:

- Kursk is one of the oldest cities in Russia. It was first mentioned in documents from 1032.
- Completely destroyed by the Tatars in 1240, it was not rebuilt until 1586, when it became a military outpost to protect the advancing Russian colonization from Tatar attack.
- The town, however, lost much of its importance at the beginning of the 18th century when the Russian border was moved farther south.
- In World War II, fierce fighting took place around Kursk and the city was severely damaged; the Battle of Kursk in July–August 1943, the largest tank battle in World War II, ended in the defeat of the Germans.

Yakutsk (Russia) - Known as one of the coldest cities in the world, it's recently been in the news due to extreme weather conditions and climate change impacts.

Rotorua - A geothermal area in New Zealand known for its hot springs and geysers, recently discussed for its volcanic activity and tourism initiatives.

Timbuktu - A historic city in Mali, often mentioned in the context of cultural heritage and preservation efforts for its ancient manuscripts.

10. Nankai Trough**Context:**

Recently, Japan's meteorological agency said the likelihood of strong shaking and large tsunamis is higher than normal on the Nankai Trough.

About Nankai Trough:

- It is a "subduction zone" between two tectonic plates in the Pacific Ocean, where massive earthquakes have hit in the past.
- This underwater subduction zone (nearly 900 km long) where the Eurasian Plate collides with the Philippine Sea Plate, pushing the latter under the former and into the Earth's mantle.
- Location: It runs from Shizuoka, west of Tokyo, to the southern tip of Kyushu Island.

- It has been the site of destructive quakes of magnitude eight or nine every century or two.
- **These so-called "megathrust quakes", which often occur in pairs, have been known to unleash dangerous tsunamis along Japan's southern coast.**

What is the Subduction Zone?

- It is a spot where two of the planet's tectonic plates collide and one dives, or subducts, beneath the other.
- Tectonic plates are pieces of the Earth's rigid outer layer that slowly move across the planet's surface over millions of years.
- This is the main tenet of plate tectonics, the theory that portions of Earth's shell glide over the lower mantle, taking continents with them.
- Subduction zones occur in a horseshoe shape around the edge of the Pacific Ocean, offshore of the USA, Canada, Russia, Japan, and Indonesia, and down to New Zealand and the southern edge of South America called the "Ring of Fire,"
- These subduction zones comprise "the most seismically and volcanically active zone in the world, responsible for more than 80% of the world's biggest earthquakes and most of the planet's active volcanoes.

11. Indian Military Exercises**Context:**

Recently, the Indian Air Force and Royal Malaysian Air Force participated in Exercise Udara Shakti 2024.

Indian Military Exercise	Participating Country
1. Exercise Udara Shakti	Malaysia
2. Exercise Mitra Shakti	Sri Lanka
3. Exercise Yudh Abhyas	United States
4. Exercise Garuda Shakti	Indonesia

About Exercise Udara Shakti:

- The joint air exercise was conducted in collaboration with the Royal Malaysian Air Force (RMAF) at Kuantan, Malaysia.
- It was aimed at bolstering operational efficiency, technical experts of both Air Forces engaged in exchange of their maintenance practices.
- During the exercise, IAF's Su-30MKI fighter jets engaged in air combat missions alongside the RMAF's Su-30MKM fighters, enabling the crew of both air forces to familiarize with each other's operational protocols, thereby enhancing interoperability, commonality and overall effectiveness in Su-30 aircraft operations.

Key facts about Su-30MKI:

- The Sukhoi Su-30MKI is a multirole combat fighter aircraft.
- It is jointly developed by the Sukhoi Design Bureau and Hindustan Aeronautics Limited (HAL) for the Indian Air Force (IAF).
- Based on the Su-30 fighter aircraft, Su-30MKI is equipped with thrust vectoring control and canards.

12. Mountains and countries where they are located**Context:**

An expedition team from the Ministry of Defence, led by 'Divyang' Uday Kumar, made history by hoisting the largest Indian flag atop Mount Kilimanjaro.

Mountain	Country
1. Mount Kilimanjaro	Tanzania
2. Mount Aconcagua	Argentina
3. Mount Kosciuszko	Australia
4. Mount Elbrus	Russia

About Mount Kilimanjaro

- It is a dormant volcano situated in Tanzania, East Africa.

- It holds the title of the highest peak (5,895 meters) in Africa.
- The mountain is also the world's tallest freestanding mountain, meaning it is not part of a mountain range.
- Kilimanjaro is composed of three distinct volcanic cones: Shira, Kibo, and Mawenzi. Kibo is the highest and houses the summit, Uhuru Peak.
- It is a part of UNESCO's World Heritage Site 'Kilimanjaro National Park'.

13. Escarpment**Context:**

A new study has linked continental break-up to new topological like plateaus and 'escarpments' form.

Escarpment:

- An escarpment (kilometre-high steep slopes) is an area of the Earth where elevation changes suddenly.
- Escarpment usually refers to the bottom of a cliff or a steep slope. (Scarp) refers to the cliff itself.

Escarpments separate two-level land surfaces.

- For example, an escarpment could be the area separating the lower parts of the coast from higher plateaus.
- An escarpment also usually indicates two different types of land, such as the area on a rocky beach where tall cliffs become rocky sand.
- One side of an escarpment could be rock from one geologic era, while the other side of the escarpment could be rock from a different geologic era.

Escarpments are formed by one of 2 processes - erosion and faulting.

By Erosion - Erosion creates an escarpment by wearing away rock through wind or water.

- One side of an escarpment may be eroded more than the other side.
- The result of this unequal erosion is a transition zone from one type of sedimentary rock to another.

- One example is the Niagara Escarpment, which runs in an arc from the U.S. state of New York, through the Canadian province of Ontario, and down to the U.S. state of Illinois.
- All along the Niagara Escarpment, hard, resistant rock sat on top of soft rock.
- As wind and water eroded the soft rock underneath, the hard rock tumbled down, creating cliffs and escarpments.
- The most dramatic example of this unequal erosion is the waterfalls at Niagara Falls.

By Faulting - The other process by which escarpments are formed is faulting.

- Faulting is movement of the Earth's top layer, or crust, along a crack called a fault. The same process often results in earthquakes.
- Faulting creates escarpments as it moves pieces of the Earth around.
- The Elgeyo Escarpment, part of Kenya's Great Rift Valley, was formed by faulting millions of years ago.
- The faulting that resulted in the Elgeyo Escarpment turned seabeds into nearly vertical cliffs.

Escarpments are found on every continent, even Antarctica.

Rupes- Rupes is the Latin word for cliff. Earth isn't the only place for escarpments.

- Rupes, created by faulting, erosion, or the impact of a meteorite, are escarpments on other planets or moons.
- There are rupes on Mercury, Mars, our moon, and the rocky moons of other planets.



@RCREDDYIAS

**For other months issues and updates
Join our telegram channel**

14. Islands in news

Context:

Recently, St Martin's Island of Bangladesh was in controversy after the resignation of Former Bangladesh Prime Minister Sheikh Hasina.

Islands	Countries
1. St. Martin's Island	Bangladesh
2. Langkawi Island	Malaysia
3. Bouvet Island	Norway
4. Farasan Islands	Saudi Arabia

About the St. Martin's Island:

- **Location and Geography:** The island is located in the northeastern region of the Bay of Bengal, close to the border between Bangladesh and Myanmar.
- It is about nine kilometres away from the southern tip of Bangladesh's Cox's Bazar-Teknaf peninsula.
- The 7.3 km long island is mostly flat and sits at an elevation of 3.6 metres above the mean sea level.
- It is Bangladesh's only coral island — there are reefs from 10-15 km to the west-northwest — and is also a breeding ground for sea turtles.

Historical Background:

- The island was once part of the Teknaf peninsula (around 5,000 years ago) but gradually got submerged into the sea.
- **Around 450 years ago, the southern suburbs of present-day St Martin's Island resurfaced.**
- The Arab merchants were among the first ones to settle on the island in the 18th Century.
- **The merchants initially named the island 'Jazira' (meaning 'the island' or 'the peninsula') and later changed it to 'Narikel Jinjira' or 'Coconut Island'.**
- In 1900, British India annexed the island during a land survey. By then, the island came to be known as St Martin's Island, named after then Deputy Commissioner of Chittagong Martin.

15. Neelakurinji

Context:

Neelakurinji (*Strobilanthes kunthiana*), a flowering shrub that blooms once every 12 years, is now classified as Vulnerable (Criteria A2c) on the IUCN Red List.

About:

- The Neelakurinji, scientifically known as *Strobilanthes* spp. is a purplish flowering shrub, which blooms once in 12 years in the hills of the Western Ghats and Himalayan hills. Neelakurinji matures in 12 years' time and flowers gregariously every 12 years.
- These beautiful purplish-blue flowers were used by a tribe in Tamil Nadu called Paliyan to calculate their age, as they bloom after every 12 years during the months of September and October.*
- Kurinji or Neelakurinji, scientifically known as *Strobilanthus kunthianus*, is a shrub that grows in the shola forests of the Western Ghats in South India.
- In addition to the Western Ghats, Kurinji is also found in the Shevaroy Hills of the Eastern Ghats in Tamil Nadu as well as the Bellary district of Karnataka.*
- The year 2006 was when the Neelakurinji last bloomed in Kerala and Tamil Nadu, after a span of 12 years.
- Neelakurinji (*Strobilanthes kunthiana*), the purplish flowering shrub, which blooms once in 12 years, has been included on the IUCN (International Union for Conservation of Nature) official Red List of threatened species.
- The latest global assessment confirms its threatened status in the Vulnerable (Criteria A2c) category of the IUCN.*

16. Nord Stream pipelines

Context:

Almost two years after bombing of the Nord Stream pipelines under the Baltic Sea, it remains unclear who sabotaged the pipes.

Nord Stream pipelines from Russia



About the Nord Stream Pipeline:

- Nord Stream is a twin pipeline system, a subsea export gas pipeline that runs under the Baltic Sea carrying gas from Russia to Europe, built and operated by Nord Stream AG.
- Source: Bovanenkovo oil and gas condensate deposit in Western Siberia, and runs from Vyborg, Russia to Lubmin near Greifswald, Germany.
- It crosses the Exclusive Economic Zones (EEZs) of Russia, Finland, Sweden, Denmark and Germany, as well as the territorial waters of Russia, Denmark, and Germany.*
- Nord Stream 1, completed in 2011 (From Vyborg in Leningrad to Lubmin near Greifswald, Germany).
- Nord Stream 2, completed in September 2021 (From Ust-Luga in Leningrad to Lubmin).

Importance For Europe

- Europe's dependence on Russia: For Natural gas.
- No easy replacements: No infrastructure to import LNG from exporters like Qatar and the U.S.
- European Green Deal: To phase out of Nuclear & Coal-based energy, increased dependence on Russian Gas.
- & delivering important European customers.

- Industrialist's Investment: Pressurise the govt. to go ahead with Nord Stream.
- Economic impact: Gas used for factories, offices and power generation.

Importance For Russia:

- Part of Major Budget Chunk: 40% of its budget comes from sales of gas and oil.
- Bypass transit countries: Cuts operating costs by doing away with transit fees & delivering important European customers.
- Increases Europe's dependence on Russia.

17. Location of Poland

Context:

Members of the Indian community in Warsaw have expressed excitement over the Indian Prime Minister's upcoming visit to Poland, which will be the first visit by an Indian PM to Poland in 45 years.



About Poland:

- It is a country in central Europe.

Borders:

- Poland's borders have changed many times over the centuries. Its present borders were set after World War II ended in 1945.

- **Poland has seven neighbours: Germany, Slovakia, the Czech Republic, Lithuania, Belarus, Ukraine, and Russia.**

- **Poland has seven neighbours: Germany, Slovakia, the Czech Republic, Lithuania, Belarus, Ukraine, and Russia.**

- It has a variety of striking landscapes, from the sandy beaches of the Baltic Sea coast in the north and the rolling central lowlands to the snowcapped peaks of the Carpathian and Sudeten Mountains in the south.

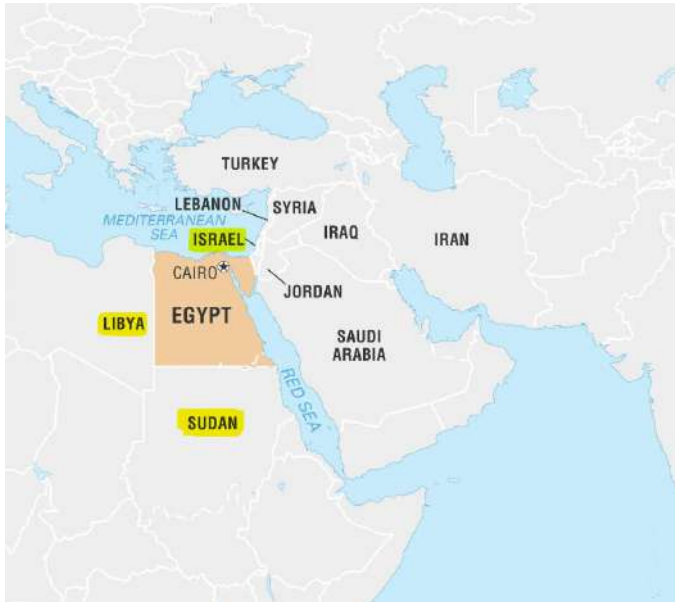
History:

- In 1795, Poland was conquered and divided up among Russia, Prussia (now Germany), and Austria.
- Poland ceased to exist as a country for 123 years.
- In 1918, after World War I, Poland was restored as a country. But just 21 years later, Germany and the Soviet Union attacked, intent on dividing Poland between them.
- The aggression marked the beginning of World War II.
- With the fall of Nazi Germany, Poland effectively lost its independence once again, becoming a communist satellite state of the Soviet Union.
- Nearly a half century of totalitarian rule followed, though not without strong challenges on the part of Poland's workers, who, supported by a dissident Catholic Church, called the economic failures of the Soviet system into question.
- In the late 1970s, beginning in the shipyards of Gdańsk, those workers formed a nationwide movement called Solidarity (Solidarność).
- In May 1989, the Polish government fell along with communist regimes throughout eastern Europe, beginning Poland's rapid transformation into a democracy.

18. Location of Egypt

Context:

Egypt played mediator role in ceasefire talks on Gaza.



19. Transboundary rivers

Context:

The Ministry of External Affairs (MEA) denied that floods in eastern districts of Bangladesh were caused due to the opening of the Dumbur dam in Tripura.

Transboundary River	Associated State
1. Feni	Tripura
2. Gumti	Tripura
3. Torsa	West Bengal
4. Barak	Assam

Feni - Tripura

- The Feni River flows through Tripura and forms part of the border with Bangladesh.

Gumti - Tripura

- The Gumti River flows through Tripura and also crosses into Bangladesh.

Torsa - West Bengal

- The Torsa River flows through West Bengal and also crosses into Bhutan and Bangladesh.

Barak - Assam

- The Barak River flows through Assam and later enters Bangladesh.

About Gumti River:

- Gumti River originating from the Gumti Wildlife Sanctuary in Tripura.
- Gumti River is a river flowing through the north-eastern Indian state of Tripura and the district of Comilla in Bangladesh.
- The Dumbur dam is built upon the Gumti river that has formed a 40 square kilometres (15 sq mi) lake.

20. Gaza Strip's border with Egypt

Context:

A narrow stretch of land along the Gaza Strip's border with Egypt has emerged as the main stumbling block in negotiations.

About the Corridor:

- It is a 14-km stretch along Gaza's border with Egypt, and is central to ceasefire negotiations between Israel and Hamas.
- It was built by the Israeli military when Gaza was under its direct occupation between 1967 and 2005.
- Israeli Prime Minister Netanyahu insists on permanent Israeli control of the corridor to prevent Hamas from rearming.
- Hamas demands a full Israeli withdrawal from Gaza, including the corridor.
- A 2005 agreement between Israel and Egypt established the corridor as a buffer zone to manage Gaza's movement and smuggling.

- After Israel's 2005 withdrawal, Egypt and the Palestinian Authority managed the area, but Hamas took control in 2007.
- The corridor has been used for smuggling, including arms and goods, through numerous tunnels.
- Egypt has destroyed many tunnels and views Israeli control as a violation of agreements.

21. Brahmaputra River system

Context:

The geological event in the Sedongpu Gully catchment draining into the Yarlung Tsangpo River, upstream of the Brahmaputra in Assam, has been happening more often since 2017.

About Brahmaputra River system:

- The Brahmaputra River originates from the Chemayungdung Glacier, which is located on the northern side of the Himalayas in Tibet, about 60 miles (100 km) southeast of Lake Mapam.
- Brahmaputra River takes a sharp turn — called the Great Bend — while flowing around Mt. Namcha Barwa (altitude 7,782 metres) and Mt. Gyala Peri (7,294 metres) to create a gorge 505 km long and 6,009 metres deep.
- The left bank tributaries of the Brahmaputra River System are Lhasa River, Nyang River, Parlung Zangbo River, Lohit River, Dhanashri River, and Kolong River.

22. Location of Sudan

Context:

The Arbaat Dam in eastern Sudan has collapsed following heavy rainfall, causing severe flooding.

About Sudan:

- Located in the north eastern part of Africa, it is Africa's 3rd largest country by area. Before the secession of South Sudan in 2011, Sudan was the largest country in Africa.

- It is bordered with the Central African Republic to the southwest, Chad to the west, Egypt to the north, Eritrea to the east, Ethiopia to the southeast, Libya to the northwest, South Sudan to the south and the Red Sea.
- It is also home to the longest river in the world, the River Nile.
- The White and Blue Niles meet in Khartoum, the capital city of Sudan, and merge to become the Nile River that flows all the way to the Mediterranean Sea via Egypt.



@RCREDDYIAS

For other months issues and updates
Join our telegram channel



R.C.REDDY
IAS STUDY CIRCLE

45+ Years Director's Experience | 35+ Years Institute's History

Current Affairs Test Series for CSE Prelims 2025 (offline/online)

Offline Test Locations : Himayat Nagar or Ashok Nagar Branch

13 Tests
(100 Qs Each), Total 1300 Qs
with Detailed Explanation PDFs

Covering Static Topics Based
on 13 months of CA :
(April 2024 to April 2025)

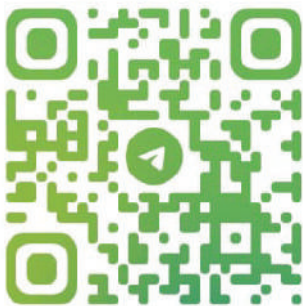
★ **Analysis by Faculty**
after each test

High - Quality MCQs

Covers Latest MCQ Patterns
based on PYQs

**CURRENT AFFAIRS TEST SERIES SCHEDULE
PLAN - 2024-25**

S.No.	Test Name	Date of Test
1	CA April 2024	18-08-2024
2	CA May 2024	01-09-2024
3	CA June 2024	15-09-2024
4	CA July 2024	29-09-2024
5	CA August 2024	13-10-2024
6	CA September 2024	27-10-2024
7	CA October 2024	17-11-2024
8	CA November 2024	15-12-2024
9	CA December 2024	12-01-2025
10	CA January 2025	16-02-2025
11	CA February 2025	16-03-2025
12	CA March 2025	13-04-2025
13	CA April 2025-20 Days	04-05-2025



Scan to Join our Telegram
Channel for more updates



Early bird discount
till 25th August
(4,720/- incl GST)



Scan for Schedule, Application
and Payment Form

WHATSAPP YOUR QUERIES TO



70756 52127

ENVIRONMENT

1. Deep-sea mining

Context:

The International Seabed Authority (ISA), is working on a set of rules to regulate the extraction of raw materials from the ocean floor.

Current status of deep-sea mining:

- The ISA wants to define a set of legally binding rules to manage deep-sea mining by 2025.
- Without these rules, any planned mining operation will not be able to get started.
- 32 countries of ISA are in favour of suspending deep-sea mining outright, a stance supported by environmental organizations and many marine scientists.
- China, along with Norway, Japan, and Nauru have pushed for a quick agreement so that mining companies can start putting their plans into action.

What is deep-sea mining?

- Deep-sea mining involves hoovering poly-metallic nodules off the ocean floor and piping them up to vessels on the water's surface.
- Polymetallic nodules are lumps of iron, manganese hydroxides, and rock partially submerged in many parts of the ocean floor. These nodules contain copper, lithium and other treasured elements.
- If their concentration exceeds 10 kg per sq. m, mining them is considered to be economically feasible.

United Nations Convention on the Law of the Sea (UNCLOS)

- UNCLOS was adopted in 1982, and came into force in 1994.
- It lays down a comprehensive regime of law and order in the world's oceans and seas establishing rules governing all uses of the oceans and their resources.
- It establishes the International Seabed Authority to regulate mining and related activities on the ocean floor beyond national jurisdiction.

The International Seabed Authority (ISA)

The International Seabed Authority (ISA) is an autonomous international organization established under

- The 1982 United Nations Convention on the Law of the Sea (UNCLOS) and
- The 1994 Agreement relating to the Implementation of Part XI of the United Nations Convention on the Law of the Sea.

All States Parties to UNCLOS are members of ISA.

- As of May 2023, ISA has 169 Members, including 168 Member States and the European Union.

Headquarters: Kingston, Jamaica.

2. Miombo forest

Context:

Recently, the United Nations Food and Agriculture Organization (FAO) and the Italian Agency for Development Cooperation (AICS) have signed two agreements for the implementation of projects aimed at protecting the miombo forest.

About Miombo forest:

- The Miombo is a biome that includes tropical and subtropical grasslands, bushlands, and savannahs.
- It is a vast African dryland forest ecosystem covering close to 2.7 million square kilometres across southern Africa, including Angola, the Democratic Republic of the Congo, Malawi, Mozambique, Tanzania, Zambia and Zimbabwe.
- The woodlands are characterized by the dominance of Brachystegia species, either alone or in association with Julbernardia and Isoberlinia species.
- It also encompasses four bio-regions and is responsible for maintaining the Greater Zambezi, one of the most important transnational river basins.

- It is facilitating trade in the border region between Mozambique and Zimbabwe.
- **Significance of this forest:** This forest is vital for millions of people in rural areas, providing essential resources such as firewood, food, and water.

Key facts about the Food and Agriculture Organization:

- **It is a specialized agency of the United Nations that leads international efforts to defeat hunger and improve nutrition and food security.**
- Its goal is to achieve food security for all and make sure that people have regular access to enough high-quality food to lead active, healthy lives.
- **Member countries: With 195 members - 194 countries and the European Union, FAO works in over 130 countries worldwide.**
- Its sister bodies are the World Food Programme (WFP) and the International Fund for Agricultural Development (IFAD).
- **Headquarter: Rome (Italy).**

3. Indian Siris

Context:

A pall of gloom descended on Kumaradevam gram panchayat, located in the East Godavari district, after the death of the century-old Indian siris tree.

About Indian Siris:

- Indian Siris, also known as Albizia lebbek, is a tropical tree native to India and Southeast Asia.
- It belongs to the Fabaceae family and is a deciduous tree with a wide range of uses.
- They require a warm and humid climate and can be grown in a variety of soil types, including clay, loam, and sandy soil.



@RCREDDYIAS

For other months issues and updates
Join our telegram channel

Features:

- It grows up to a maximum height of 15-20 meters and has a wide-spreading, umbrella-shaped canopy.
- The tree trunk is typically straight, with a diameter of up to 1 meter.
- Its leaves are green and fern-like and can grow up to 25 cm long.
- It has a moderate to dense branching pattern, with branches that spread outwards and upwards from the trunk.
- It produces small, white, and fragrant flowers in clusters.

Ecological Role:

- The tree is capable of fixing nitrogen from the atmosphere, which helps to enrich the soil and support other plant species.
- The extensive, shallow root system makes it a good soil binder and suited to soil conservation and erosion control.

4. Methylococcus oryzae

Context:

India's first cultures of indigenous methane-mitigating agents, particularly the novel methanotroph Methylococcus oryzae, were reported from rice fields and wetlands in Western India.

About:

- Methylococcus oryzae, discovered at Agharkar Research Institute, promotes rice plant growth and has been documented in various habitats.
- These bacteria oxidize methane, a potent greenhouse gas, thus helping in mitigating global warming.
- They are oval and elongated in shape, similar to that of a cucumber, and hence the name 'methane eating cucumbers.'

- Methane is the second most important greenhouse gas, has 26 times more global warming potential compared to carbon-di-oxide.

5. Ramsar Sites in news

Context:

There were reports that the Ramsar site Bhoj Wetland was under threat of getting delisted from Ramsar Sites.

The Union Government has denied that the site faces no threat of delisting from Ramsar Convention list of wetlands of international importance.

Ramsar Sites	Located in
1. Nakti Bird Sanctuary	Bihar
2. Khijadia Wildlife Sanctuary	Gujarat
3. Hygam Wetland Conservation Reserve	Jammu and Kashmir
4. Bhoj Wetland	Madhya Pradesh

Bhoj Wetland:

- Bhoj Wetland comprises two contiguous man-made reservoirs, the "Upper Lake" and the "Lower Lake".
- The Upper Lake was created by Raja Bhoj in the 11th century by the construction of an earthen dam across the Kolans River, and the Lower Lake was constructed nearly 200 years ago, largely from the overflow of water from the Upper Lake.
- Both the lakes are urban water bodies, located in the city of Bhopal, the state capital.
- Bhoj Wetland was designated as a Ramsar site in November 2002.

Ramsar Convention

- It is an international treaty aimed at conserving wetlands around the world. It was adopted in Ramsar, Iran, in 1971 and entered into force in 1975.

- Countries that are parties to the convention commit to designating wetlands of international importance within their territories. These sites are referred to as Ramsar Sites.

Criteria:

- Supporting vulnerable, endangered, or critically endangered species or
- Threatened ecological communities or,
- If it regularly supports 20,000 or more waterbirds or,
- Is an important source of food for fishes, spawning grounds, and nursery.

India has been a party to the Convention since 1982.

Presently India has 82 sites designated as Ramsar sites.

6. National Plan for Conservation of Aquatic Ecosystems

Context:

The central government is implementing the National Plan for Conservation of Aquatic Ecosystems (NPCA) to conserve and manage wetlands nationwide.

National Plan for Conservation of Aquatic Ecosystems:

- NPCA – It is a conservation program for wetlands and lakes.
- It is formed by merging the National Lake Conservation Plan and the National Wetlands Conservation Programme.
- Objectives – To holistically conserve and restore the wetlands for achieving the desired water quality enhancement, besides improvement in biodiversity and ecosystems.
- To promote mainstreaming of wetlands in developmental programming with States by supporting formulation and implementation of integrated management plans, capacity development and research.
- **Mode – It is a centrally sponsored scheme.**
- Central assistance is provided based on state government proposals, aligned with guidelines and budget availability.

- Regulated by- The Wetlands (Conservation and Management) Rules, 2017, established under the Environment (Protection) Act, 1986.
- Implemented by- Ministry of Environment, Forest and Climate Change.
- NPCA Guidelines – To facilitate implementation of NPCA by outlining the different steps to be undertaken for preparing and submitting plans before implementation.
- Activities covered - Wastewater treatment, shoreline protection, lakefront development, desilting, stormwater management, bioremediation, catchment area treatment, lake beautification, survey and demarcation, bio-fencing, fisheries development, weed control, biodiversity conservation, education, and community participation.

7. Nitrogen-Use Efficiency

Context:

Indian scientists have discovered significant natural variations in rice nitrogen use efficiency (NUE) along with associated traits and genes.

About Nitrogen-Use Efficiency (NUE):

- Nitrogen-Use Efficiency (NUE) is calculated as the ratio between nitrogen used and the harvest, with a higher number indicating lower wastage.
- Declining NUE leads farmers to use more fertiliser in hopes of increasing yield, which paradoxically worsens NUE.
- Typically, crops absorb only 30% of the nitrogen fertiliser applied; the remaining 70% seeps into the environment, causing health issues and contributing to climate change.
- Rice accounts for 37 percent of the nitrogen fertiliser used for cereals in India and this high consumption is partly due to rice's relatively low NUE, requiring more fertiliser for optimal yield.
- In India, cereals account for over 69% of nitrogen fertiliser consumption, with rice using 37% and wheat 24%.

8. Guru Ghasidas-Tamor Pingla Tiger Reserve

Context:

The Chhattisgarh government on Wednesday announced that it would establish a new tiger reserve and named it as Guru Ghasidas-Tamor Pingla Tiger Reserve.

Protected Area	Located in
1. Guru Ghasidas-Tamor Pingla Tiger Reserve	Chhattisgarh
2. Sariska Tiger Reserve	Rajasthan
3. Pobitora Wildlife Sanctuary	Assam
4. Bandhavgarh Tiger Reserve	Madhya Pradesh

About Guru Ghasidas-Tamor Pingla Tiger Reserve:

- It is located in the northern part of the state Chhattisgarh, bordering Madhya Pradesh and Jharkhand.
- This will be the fourth Tiger Reserve in Chhattisgarh, after the Udanti-Sitanadi, Achanakmar, and Indravati Reserves.
- It is spread across the combined areas of the Guru Ghasidas National Park and Tamor Pingla Wildlife Sanctuary in Chhattisgarh.
- **Fauna:** This area is home to various mammal species, including tigers, leopards, hyenas, jackals, wolves, sloth bears, barking deer, chinkara, and chital.
- **Rivers:** It serves as the origin of significant rivers such as Hasdeo Gopad and Baranga and a catchment area for rivers like Neur, Bijadhur, Banas, Rehand, and numerous smaller rivers and rivulets.

Guru Ghasidas National Park

- It connects Jharkhand and Madhya Pradesh and provides a corridor for tigers to move between the Bandhavgarh and Palamau Tiger Reserves.
- It was originally part of the Sanjay Dubri National Park, Guru Ghasidas Park was created as a separate entity in Chhattisgarh's Sarguja region after the formation of the state in 2001.

9. Antarctica's Deep-Winter Heatwave

Context:

For the second time in just two years, Antarctica is experiencing a record-breaking heatwave during its winter season.

What's Causing Antarctica's Deep-Winter Heatwave?

Weakening Polar Vortex: The Polar vortex is a band of cold air and low-pressure systems that usually swirls around the poles of the Earth in the stratosphere. It typically remains strong and stable during the southern hemisphere's winter, effectively trapping cold air over Antarctica.

- But this year, large-scale atmospheric waves (think periodic disturbances in the fields of atmospheric variables) disturbed the vortex, allowing trapped cold air to escape and warmer air to sneak in.
- As this warmer air descended from the upper atmosphere, it led to the temperature surge in the region.
- A weakened southern hemisphere vortex is a rare event, occurring roughly once every two decades on average.

Antarctic Sea Ice Reduction: In June, the sea ice coverage hit its second-lowest level ever for that time of year (just a smidge more than what we saw in June 2023, which was the lowest ever).

- Sea Ice acts like nature's reflective shield. Its bright, white surface bounces more sunlight (solar energy) back into space than liquid water does. So, when the sea ice shrinks, more heat gets absorbed, and temperatures rise.

Moisture from the Indian Ocean: Convection and tropical cyclone activity along with the increasingly wavy jet stream (the fast-moving ribbon of air in the upper atmosphere) in the Indian Ocean played a significant role.

Fallout and Concerns

Melting Ice Sheets: Warmer temperatures mean increased melting of ice sheets and glaciers. It contributes to rising sea levels globally, affecting the coastal communities.

- The Antarctic Ice Sheet, a glacier covering 98% of the Antarctic continent, holds more than 60% of the world's total freshwater.

Ecosystem Disruption: Antarctic ecosystems are finely tuned to extreme cold. A sudden heatwave can throw everything off balance, affecting everything from penguins to krill populations.

Feedback Loops: As ice melts, darker ocean water is exposed. Dark surfaces absorb more heat, leading to further warming—a vicious cycle.

10. Clean Plant Programme

Context:

The Union Cabinet on Friday approved the Clean Plant Programme (CPP), aimed at increasing the yield and productivity of horticulture crops in India.

About:

- The Clean Plant Programme (CPP) aims to enhance the quality and productivity of fruit crops across the nation.
- It is an Initiative by the Ministry of Agriculture and Farmers Welfare.

Implemented by:

- The programme will be implemented by the National Horticulture Board in collaboration with the Indian Council of Agricultural Research (ICAR).

Core Components of the CPP

1. Clean Plant Centres (CPCs): Nine world-class CPCs will be set up across India.

- These centres will have advanced labs for diagnostics, therapy, and tissue culture.
- The CPCs will be located in regions suited for specific fruit crops, such as Grapes (Pune), Temperate Fruits like Apple, Almond, and Walnut (Srinagar & Mukteshwar), Citrus Fruits (Nagpur & Bikaner), Mango, Guava, Avocado (Bangalore), Mango, Guava, Litchi (Lucknow), Pomegranate (Sholapur) and Tropical/Sub-Tropical Fruits in Eastern India

2. Certification and Legal Framework: A strong certification system will be put in place to ensure that planting materials are produced and sold with full accountability. **This system will be supported by regulations under the Seeds Act of 1966.**

3. Enhanced Infrastructure: Large nurseries will receive support to develop the necessary infrastructure for multiplying clean planting materials efficiently.

Importance of the CPP:

- **Sustainability:** The programme aligns with initiatives like Mission LiFE and One Health, promoting eco-friendly farming practices.
- **Self-Reliance:** It reduces the need for importing planting materials, making India more self-sufficient.
- **Global Leadership:** CPP will help position India as a leading exporter of high-quality fruits, driving transformative changes in the horticulture sector.

11. Ballast Water

Context:

Tamil Nadu Water Resources Department (WRD) observed that Kamarajar Port is the main reason for the spread of the invasive species by not regulating the ballast water from ships.

About:

- Tamil Nadu's Water Resources Department (WRD) is seeking ₹160 crore from Kamarajar Port to address the invasive charru mussel (*Mytella strigata*) problem.
- The mussel disrupts marine ecosystems and affects fisher boat movements.

About Ballast Water

- Ballast water is seawater taken on board ships to maintain stability and immersion.



@RCREDDYIAS

For other months issues and updates
Join our telegram channel

- It is pumped in when cargo is unloaded and pumped out when cargo is loaded.

Utility:

- Used for stability and manoeuvrability of ships during voyages.
- Helps when ships are empty, lightly loaded, or need more stability due to rough seas.
- Adds weight to ensure the ship can pass under bridges and structures.

Emerging Issues

- Ballast water can carry invasive species, leading to ecological damage.
- There have been hundreds of invasions due to ballast water, often with severe ecological impacts.
- In India, around 30 invasive species have been recorded, with the charru mussel being particularly harmful.

Global Regulations:

- The Ballast Water Management (BWM) Convention, effective from September 8, 2017, requires ships to manage ballast water to prevent the spread of harmful organisms. Ships must treat ballast water or exchange it with oceanic water before discharge.
- Countries like Australia and New Zealand rigorously enforce ballast water regulations to protect their ecosystems, such as the Great Barrier Reef.

India's Position:

- India has not signed the BWM Convention, meaning there are no specific regulations or checks for ballast water discharge at Indian ports. Indian ports are not responsible for regulating ballast water.
- Under current Indian law, ports are not liable for invasive species caused by ballast water. Ship owners may be held responsible if regulations were in place.

12. Wildlife Sanctuaries in news**Context:**

A unique orchid species- *Gastrodia indica* was recently discovered in Fambonglho Wildlife Sanctuary, Sikkim.

Wildlife Sanctuary	Located in
1. Fambonglho Wildlife Sanctuary	Sikkim
2. Cotigao Wildlife Sanctuary	Goa
3. Bassi Wildlife Sanctuary	Rajasthan
4. Koyna Wildlife Sanctuary	Maharashtra

About *Gastrodia indica*:

- It is the first orchid from India that never opens its flower.
- The orchid was found at an elevation of 1,950–2,100 metres above sea level.
- This is the first cleistogamous species of the genus *Gastrodia* discovered from India.
- The *Gastrodia* genus is known for terrestrial, herbaceous, and holomycotrophic orchids.
- Cleistogamous plants are highly specialized, as they do not depend on external pollinators like insects or wind for reproduction.
- Holomycotrophic species like *Gastrodia indica* rely entirely on a fungal host for sustenance, lacking chlorophyll and drawing carbon from underground fungi.
- The discovery adds to India's botanical diversity, bringing the total number of *Gastrodia* species in the country to 10.
- Threats: *Gastrodia indica* faces potential threats due to its limited population and specific habitat requirements.

13. Kazhuveli Bird Sanctuary**Context:**

Recently, the Centre declared three new Ramsar sites: Nanjarayan Bird Sanctuary and Kazhuveli Bird Sanctuary in TamilNadu, and Tawa Reservoir in Madhya Pradesh.

About:

The Kazhuveli Bird Sanctuary, is a protected area in Villupuram district, Tamil Nadu.

- The sanctuary features the brackish shallow Kaluveli lake, linked to the Bay of Bengal via the Uppukalli creek and Edayanthittu Estuary.
- Kazhuveli is rich in biodiversity and is among the largest in peninsular India.
- It is a crucial stopover for migratory birds, a breeding ground for resident bird species and fish, and a significant source for aquifer recharge.

The Tawa reservoir is located in Madhya Pradesh.

- It is at the confluence of the Tawa and Denwa rivers.
- Originating from the Mahadeo Hills, the Tawa River is the longest tributary of the Narmada River.
- It lies within the Satpura Tiger Reserve, forming the western boundary of Satpura National Park and Bori Wildlife Sanctuary.
- The reservoir is a crucial habitat for rare and endangered species, including birds, reptiles, and plants, and serves as an ecologically significant area within the region.

The Nanjarayan Bird Sanctuary is located in Tamil Nadu.

- It is a large shallow wetland that serves as a crucial habitat for a variety of species.
- The sanctuary acts as a feeding and nesting habitat for resident bird species and is an important feeding ground for migratory birds during their seasonal movements.

Pala Wetland is the largest natural wetland in the state of Mizoram. It is one of the Ramsar Sites in India.

- Its geographical location falls under the Indo-Burma biodiversity hotspot and is therefore rich in animal and plant species.
- The lake is a major component of the Palak Wildlife Sanctuary and it supports the major biodiversity of the sanctuary.

14. Artificial lights**Context:**

Artificial lights that run all night, such as streetlights, can make leaves grow so tough that insects cannot eat them, which could threaten urban food chains, according to a new study.

About:

- The researchers wanted to examine how artificial lights impact the relationship between plants and insects.
- The researchers found no sign of insects munching on leaves in areas which were lit the brightest at night due to toughening of leaves.
- They also noted that artificial lights altered the levels of nutrients and chemical defence compounds in the leaves that were analysed.
- Concerns: Lower levels of herbivory imply lower abundances of herbivorous insects, which could in turn result in lower abundances of predatory insects, insect-eating birds, and so on.
- The decline of insects is a global pattern observed over recent decades.

15. Gross Environment Product Index**Context:**

Uttarakhand has become the first Indian state to launch a Gross Environment Product Index.

About Gross Environment Product Index:

- It is presented as a novel, integrative metric designed exclusively to evaluate ecological development caused by human interventions.
- It will be determined by the condition of four main constituents of the environment which are directly impacted by development activities including air and water quality, number of trees planted in a year and the measure of the area of organic soil.
- The formula is, $GEP\ index = (Air-GEP\ index + Water-GEP\ index + Soil-GEP\ index + Forest-GEP\ index)$

- It provides assessments of improvements in air, water, soil, and forest quality.

Significance

- It helps in assessing the impact of anthropological pressure on our ecosystem and natural resources.
- It provides a robust and integrated method for assessing a state's ecological growth, capturing various facets of environmental well-being as a result of human actions.

16. Banni Grassland**Context:**

In a new study, researchers have assessed the suitability of different areas of Banni for sustainable grassland restoration, considering ecological value to be the primary criterion.

About Banni Grassland:

- Located in Kutch District, Gujarat State, India.
- Dry grassland environment on the outer southern edge of the Rann of Kutch.
- Renowned for abundant fauna and biodiversity.
- Legally protected as a reserve forest.
- In the study it is found that as much as 937 sq. km (or 36%) of the existing grassland area was "highly suitable", 728 sq. km (28 %) was "suitable", 714 sq. km (27%) was "moderately suitable", 182 sq. km. (7%) was "marginally suitable", and 61 sq. km (2%) was "not suitable" for restoration.

Nearly two-thirds of the complete Banni grasslands can be restored easily by simply providing them with adequate water sources, either through irrigation or rainwater harvesting.



@RCREDDYIAS

For other months issues and updates
Join our telegram channel

17. 'A1' and 'A2' types of milk

Context:

- FSSAI directed food businesses, including e-commerce players, to remove claims of 'A1' and 'A2' types of milk and milk products from packaging, calling such labelling misleading.
- It said that these claims do not conform with the Food Safety and Standards Act, 2006.
- A1 and A2 milk differ in their beta-casein protein composition, which varies based on cow breed.

A1 vs. A2 Variety

- Casein proteins make up roughly 80% of proteins in cow milk. There are four casein subtypes: alpha S1, alpha S2, beta, and kappa-casein.
- Beta-caseins, specifically A1 and A2 beta-casein, are the most abundant.
- Cow milk contains a combination of A1/A2-beta casein, despite being conventional, organic, grass-fed, full-fat, or skim.
- A1 and A2 are similar, with only one difference at position 67 in the amino acid sequence: histidine for A1 and proline for A2.

Impact of A1 beta-casein:

- Research suggests that the structural difference, albeit small, has a significant impact on digestion.
- The digestion of A1 beta-casein, unlike A2, releases beta-casomorphin 7 (BCM-7) which is believed to be an antecedent to various health problems like gut issues, heart disease, type 1 diabetes, autism, and cognitive decline.

18. Lithium brine extraction

Context:

A recent study published in the journal IEEE Transactions on Geoscience and Remote Sensing reveals that Chile's Atacama salt flat is sinking at 1 to 2 centimetres per year due to lithium brine extraction.

About Lithium brine extraction:

- Lithium brine extraction is a process where salt-rich water is pumped to the surface and into evaporation ponds to extract lithium.
- This method is prevalent in salt flats like Chile's Atacama, one of the world's largest lithium sources.
- Cause of sinking: The subsidence is occurring because the rate of lithium-rich brine pumping exceeds the natural recharge rate of the aquifers, leading to a downward movement of the Earth's surface.
- Area of concern: The most affected region is in the southwest part of the salt flat, where lithium mining operations are concentrated.
- The sinking area measures approximately 8 km from north to south and 5 km from east to west.

What is Lithium?

- Lithium, often referred to as "white gold," is a highly sought-after metal crucial for the production of rechargeable batteries used in laptops, mobile phones, and electric vehicles—an essential component in global efforts to combat climate change.

Environmental impact of Lithium Mining:

- **Water scarcity:** The extraction process is water-intensive; it requires approximately 2,000 tons of water to produce just one ton of lithium.
- This is particularly problematic in the Atacama Desert, where water is already scarce, affecting indigenous communities and local wildlife.
- **Chemical contamination:** Chemicals like sulfuric acid and sodium hydroxide used in lithium extraction contaminate the soil and water, posing a severe threat to ecosystems and endangering species.

Impact on Wildlife: A 2022 study highlighted that lithium mining has led to a decline in the flamingo population in the Atacama region due to reduced water levels, affecting their reproduction.

19. Hollongapar Gibbon Sanctuary**Context:**

Assam wildlife department has recommended to the Centre that forest clearance be granted to a Cairn Oil and Gas proposal for oil and gas exploration in the eco-sensitive zone (ESZ) of the Hollongapar Gibbon wildlife sanctuary.

About Hollongapar Gibbon Sanctuary:

- **Location:** In Jorhat district of Assam.
- **Nature:** The Hollongapar Gibbon Sanctuary is a protected area of evergreen forest.
- **Established:** The sanctuary was officially established and renamed in 1997 and is the only sanctuary in India named after a gibbon due to its distinction for containing the densest gibbon populations in India

Unique Wildlife:

- **The Sanctuary contains India's only Ape's i.e. the Hoolock gibbons.**
- **It is home to northeastern India's only nocturnal primate i.e. the Bengal slow loris.**

Highest Primates density: The Sanctuary is home to six other primate species, making it an area with the highest biodiversity of primate species of any Protected Area in the country.

Other primates include: Stump-tailed macaque, northern pig-tailed macaque, eastern Assamese macaque, rhesus macaque, and capped langur.

- **Also found at the sanctuary are Indian elephants, tigers, leopards, jungle cats, wild boar, three types of civet, four types of squirrel, and several other types of mammal**

Nilgiri Tahr, locally known as Varaiaadu, is the state animal of Tamil Nadu. It is endemic to the Nilgiri Hills and the southern portion of the Western Ghats in Tamil Nadu & Kerala.

20. Protected Areas in news**Context:**

Recently, four monkeys were found dead in the Aralam Wildlife Sanctuary in Kannur district of Kerala, raising concerns among wildlife authorities.

Protected Areas	Located in
1. Aralam Wildlife Sanctuary	Kerala
2. Talley Valley Wildlife Sanctuary	Arunachal Pradesh
3. Ranthambore National Park	Rajasthan
4. Bori Wildlife Sanctuary	Madhya Pradesh

About Aralam Wildlife Sanctuary:

- **Location: It is located on the western slopes of Western Ghats and it is the northernmost wildlife sanctuary of Kerala.**
- It is contiguous with Wayanad-Brahmagiri, Wayanad northern slopes and the Protected Areas of Karnataka State namely the Brahmagiri Wildlife Sanctuary and also the forests of Coorg.
- **Rivers:** The Cheenkannipuzha river forms the main drainage system on the southern side. Other rivers Narikkadavu thodu, Kurukkathodu and Meenumuttithodu.
- **Vegetation:** It includes West Coast tropical evergreen forest, west coast semi-evergreen forests, South Indian moist deciduous forest, Southern hilltop evergreen forest and plantations.
- It is the only protected area of the West Coast Tropical Evergreen Forest of Dipterocarpus-Mesua-Palaquium type.
- **Highest peak of this sanctuary is Katti Betta.**
- **Fauna:** Elephant, Gaur, Tiger, Panther, Sambar, Spotted deer, Barking deer, Wild boar, Sloth bear, Nilgiri langur, Bonnet macaque, Common langur, Wild dog, common otter, Malabar giant squirrel etc are the major mammals.

21. Exotic Species

Context:

Recently, the Ministry of Environment, Forest and Climate Change (MoEFCC) has mandated the registration of exotic pets listed under Schedule IV of the Wildlife Act with state wildlife departments via the PARIVESH 2.0 portal within 6 months.

About Exotic Species:

- Exotic species refer to animals or plants that are moved from their natural habitat to a new location, often due to human activities.
- Status of registration: So far, Delhi's forest and wildlife department has registered eight exotic species: ball python, iguana, cockatiel, red-eared slider turtle, African grey parrot, Amazonian parrot, blue-headed parrot, and conure.
- Criteria: According to the Living Animal Species (Reporting and Registration) Rules, 2024, any individual possessing species listed under Schedule IV of the Wild Life (Protection) Act, 1972, must report and register them.**
- Wild Life (Protection) Amendment Act, 2022:** This amendment introduces Section 49 M, which mandates the registration of the possession, transfer, birth, and death of species listed in the CITES Appendices and Schedule IV of the Wild Life (Protection) Act, 1972.

Concerns with Exotic Species:

- Non-regulation:** Many exotic species are imported and bred in India without proper registration, posing risks such as zoonotic diseases.
- Pandemic risk:** The COVID-19 pandemic, being zoonotic, highlighted the dangers associated with the unregulated trade and ownership of exotic animals.
- Smuggling concerns:** Activists have raised alarms over the increasing smuggling of endangered exotic animals into India, especially from Southeast Asia. Significant seizures have been reported in Assam and Mizoram, with animals like Kangaroos, Koalas, and Lemurs being confiscated.

About the PARIVESH 2.0 Portal:

- PARIVESH 2.0 is a web-based workflow application developed by the Ministry of Environment, Forest and Climate Change (MoEFCC) for the online submission and monitoring of proposals related to environmental, forest, wildlife, and coastal regulation zone clearances.

PARIVESH stands for Pro-Active and Responsive facilitation by Interactive, Virtuous, and Environmental Single Window Hub.

Functionality: It offers a single-window solution for managing all green clearances and monitors compliance across India.

- The platform emphasises process transformation, technology integration, and domain expertise.

22. Vulture Count 2024

Context:

The World-Wide Fund for Nature-India has launched Vulture Count 2024.

About:

- It is a nationwide citizen-science initiative designed to monitor and conserve the country's rapidly declining vulture populations
- The launch of the initiative coincides with International Vulture Awareness Day on September 7, 2024.

Vulture:

- Vultures are one of the 22 species of large carrion-eating birds that live mostly in the tropics and subtropics.
- India is home to nine species of Vulture namely the Oriental white-backed, Long-billed, Slender-billed, Himalayan, Red-headed, Egyptian, Bearded, Cinereous and the Eurasian Griffon.**

Importance of Vultures:

- They serve as nature's clean-up crew by feeding on the infected carcass which kills the Pathogens and breaks the chain of infections.
- Vultures are critically important to the Parsi community as it leaves its dead bodies atop the Towers of Silence to be consumed by vultures.

Major Threats

- **Use of toxic non-steroidal anti-inflammatory drugs (NSAIDs) like Diclofenac, Lack of Nesting Trees, Electrocution by power lines, Food Dearth and Contaminated Food, Pesticide poisoning etc. threaten vultures across the country.**
- According to BirdLife International, the vulture population declined from over 40,000 in 2003 to 18,645 in 2015.
- India has lost 99 percent of the population of the three species — Oriental White-Backed Vulture, Long-billed Vulture and Slender-billed Vulture.

Conservation Status:

- **Schedule-1 of the Wildlife Protection Act 1972: Bearded, Long-billed, Slender-billed, Oriental white-backed.**
- **Rest are protected under 'Schedule IV'.**

IUCN Red List:

- **Critically Endangered:** Oriental White-backed Vulture, Long-billed Vulture, Slender-billed Vulture and Red-headed Vulture.
- **Endangered:** Egyptian Vulture.
- **Least Concerned:** Eurasian Griffon.
- **Near Threatened:** Himalayan, Bearded and Cinereous.

**@RCREDDYIAS**

**For other months issues and updates
Join our telegram channel**



R.C.REDDY
IAS STUDY CIRCLE

45+ Years Director's Experience | 35+ Years Institute's History

Current Affairs Test Series for CSE Prelims 2025 (offline/online)

Offline Test Locations : Himayat Nagar or Ashok Nagar Branch

13 Tests
(100 Qs Each), Total 1300 Qs
with Detailed Explanation PDFs

Covering Static Topics Based
on 13 months of CA :
(April 2024 to April 2025)

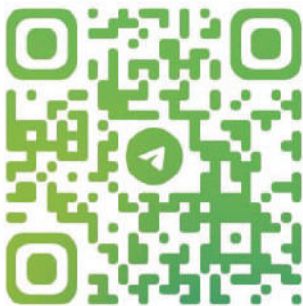
★ **Analysis by Faculty**
after each test

High - Quality MCQs

Covers Latest MCQ Patterns
based on PYQs

**CURRENT AFFAIRS TEST SERIES SCHEDULE
PLAN - 2024-25**

S.No.	Test Name	Date of Test
1	CA April 2024	18-08-2024
2	CA May 2024	01-09-2024
3	CA June 2024	15-09-2024
4	CA July 2024	29-09-2024
5	CA August 2024	13-10-2024
6	CA September 2024	27-10-2024
7	CA October 2024	17-11-2024
8	CA November 2024	15-12-2024
9	CA December 2024	12-01-2025
10	CA January 2025	16-02-2025
11	CA February 2025	16-03-2025
12	CA March 2025	13-04-2025
13	CA April 2025-20 Days	04-05-2025



Scan to Join our Telegram
Channel for more updates



Early bird discount
till 25th August
(4,720/- incl GST)



Scan for Schedule, Application
and Payment Form

WHATSAPP YOUR QUERIES TO



70756 52127

SCIENCE & TECHNOLOGY

1. Virus

Context:

Most viruses can't really affect the genome but retroviruses can integrate and reshape the genomes of the hosts they infect.

What is Virus?

- A virus is an infectious microbe consisting of a segment of nucleic acid (either DNA or RNA) surrounded by a protein coat called capsid.
- Viruses are not considered living organisms because they cannot carry out metabolic processes on their own.
- A virus cannot replicate alone; instead, it must infect cells and use components of the host cell to make copies of itself.
- Often, a virus ends up killing the host cell in the process, causing damage to the host organism.
- Well-known examples of viruses causing human disease include AIDS, COVID-19, measles and smallpox.

Retrovirus

- **Retroviruses have an RNA genome; can reverse-transcribe it to DNA and thus insert it into the host's genome.**
- **This integration can be quite stable, allowing the virus to persist in the host for long periods.**
- Types and Examples: There are several types of retroviruses, including Human Immunodeficiency Virus (HIV), which causes AIDS and the Human T-cell Leukemia Virus (HTLV), which is linked to certain types of cancer.

Endogenous Retroviruses (ERVs):

- The retrovirus invasions can sometimes mess up the integration process, causing 'zombie' regions in the host's genome. These parts are called endogenous retroviruses (ERVs).

- ERVs usually can't replicate and produce functional proteins since they lack their regulatory regions.
- If the integrations involve the germ cells — i.e. those that produce the gametes, sperm cells and ova — the host will be able to transmit its ERVs to its offspring. This happens in rare instances.
- Evolution: Over the tens of thousands of years of mammalian evolution, many retroviruses have left a number of genomic elements in the genome, sort of the genetic fossils of early infections.
- These elements have long lost the potential to produce viruses but researchers believe they have played a big hand in the evolution of their hosts.
- Around 8% of the human genome is composed of ERVs.

Significance of the Study

- In future, as research techniques continue to advance, scientists may uncover more wonderful insights into the evolutionary significance of ERVs and their contribution to human biology.
- Such knowledge will lead to breakthroughs in regenerative medicine, cancer therapies, and personalised medicine, enhancing understanding of human health and evolution.

2. Kindlins

About Kindlins:

- **These are adapter proteins that exist inside the cells attached to the cell membranes of almost all types of cells in vertebrates.**
- Kindlin family of proteins contains three members: Kindlin 1, 2, 3 with distinct amino acid sequences and tissue distribution.

- They transfer extracellular mechanical cues to biochemical signals inside the cells and play a pivotal role in conveying extracellular signals by physically interacting with structural proteins, receptors and transcription factors, triggering a cascade of chemical signals within the cell.
- Structural disruptions in these proteins can have a global impact on mechano-chemical signalling, leading to disruptions in the state of balance among all the body systems needed for the body to survive and function correctly.
- Kindlins may undergo mutations under the influence of innumerable chemical and physical carcinogens like nicotine, ultraviolet rays and many more.
- Mutated Kindlin can potentially disrupt global mechanical homeostasis within cells.

3. Vampire Stars

Context:

Researchers have made a groundbreaking discovery of a vampire star in the star cluster M67 located in the constellation Cancer, that has been rejuvenating its youth by sucking up material from a companion.

About Vampire Stars:

- These are known to astronomers as blue straggler stars (BSS), are identified easily in star clusters.
- These stars, found in clusters, appear younger than their neighbours, defying simple models of stellar evolution.
- The mystery behind their youthful appearance has long puzzled astronomers, with theories suggesting they might be consuming material from companion stars.
- They are also known as Symbiotic Binaries because they are normally in pairs.
- The Vampire star will start as the smaller star but, nearing the end of the sucking process will inevitably be the larger of the two.
- The sucking star, when it has consumed a large amount from its victim, will become a blue star, also known as a blue straggler.

Highlights of the research:

- The scientists studied the surface composition of the vampire star in M67, called WOCS 9005, an open cluster in the constellation Cancer.
- They discovered that WOCS 9005's atmosphere is unusually rich in heavy elements such as barium, yttrium, and lanthanum. These elements are typically associated with much older, more massive stars in their final stages of life.
- This star is expected to show chemistry very similar to our Sun, but they found that its atmosphere is rich in heavy elements. This chemical anomaly pointed to a fascinating possibility: WOCS 9005 had been "polluted" by material from a companion star.
- Using AstroSat's Ultraviolet Imaging Telescope (UVIT), they detected significant ultraviolet emissions from WOCS 9005.
- The blue straggler star that we see now must have eaten up most of this barium-rich material due to its gravitational pull, and is now presenting itself as a rejuvenated star.

4. Osmolytes

Context:

A research team used a technique called covalent magnetic tweezers to observe how individual protein molecules fold and unfold under different conditions and interact with osmolytes which can help treating Alzheimer's & Parkinson's.

About Osmolytes:

- These are low molecular weight organic molecules usually built up in tissues at a quite high amount during stress or any pathological condition.
- These are small molecules that help cells survive stress by stabilizing proteins and preventing them from misfolding.
- They help proteins maintain their structure and function under stressful conditions.

- Misfolded proteins can't perform their functions properly, leading to diseases.
- Osmolytes are crucial in maintaining the stability of protein structures, making them potential targets for new drugs.

Key facts about Parkinson's disease:

- It is a progressive neurological disorder that affects the nervous system and the parts of the body controlled by the nerves.
- The risk of developing Parkinson's disease naturally increases with age, and the average age at which it starts is 60 years old.
- Many studies have suggested that men are more likely to be affected by Parkinson's than women.

Cause:

- It is caused by the degeneration of nerve cells in the part of the brain called the substantia nigra, which controls movement.
- These nerve cells die or become impaired, losing the ability to produce an important chemical called dopamine.

5. Metal-air batteries

Context:

Researchers from CSIR-CMERI, Durgapur synthesised a cathode material which can be used as catalyst in Metal-air batteries.

About Metal-air batteries:

- It is an energy storage system based on electrochemical charge/discharge reactions that occur between a positive "Air Electrode" (cathode) and a negative "Metal Electrode" (anode).
- The negative electrode is typically made of metals such as Li, Zn, Al, Fe, or Na, while the positive usually contains some form of porous carbon material and a catalyst.

Advantages:

- These batteries have higher energy density than a lithium-ion battery.
- **Accessibility:** Metal-air batteries use readily available metals in India, making them more accessible than lithium-ion batteries.

- **Cost-Effective:** Producing these batteries locally reduces imports.
- **Environment-Friendly:** Metal-air batteries are recyclable, offering a safer alternative to lithium-ion batteries that pose environmental hazards.
- **Lightweight:** Metals like aluminium are lightweight and can provide comparable or even higher energy density than lithium-ion batteries, making them an attractive choice.

Applications: Due to their high scalability and energy density, M-Air batteries can be used in a large variety of applications:

- It is used in large-scale stationary energy storage applications.
- Transportation.
- Renewable generation.

6. Ransomware

Context:

C-Edge Technologies Ltd., a technology service provider to co-operative and regional rural banks was "possibly" hit by a ransomware attack, according to a recent statement by National Payments Corporation of India (NPCI).

About Ransomware:

- Ransomware is a form of malware designed to encrypt files on a device, rendering any files and the systems that rely on them unusable. Malicious actors then demand ransom in exchange for decryption.

How does Ransomware Infect Systems?

- **Phishing:** Phishing attacks are the leading cause of ransomware infections. It deceives victims into downloading ransomware through malicious attachments or links.
- **Malvertising:** It is a form of malware that falsely promotes an ad in a legitimate advertisement space.
- **Infected web pages:** Infected URLs are commonly used to distribute ransomware.

- **Social engineering:** It is the practice of tricking unsuspecting individuals into accidentally revealing private or sensitive information to use against them.
- **Drive-by Downloads:** Infects devices through compromised websites.

7. 14th Organ Donation Day

Context:

The 14th Organ Donation Day was observed on the 3rd August.

About

- The Indian Organ Donation Day (IODD) is observed annually since 2010 to augment awareness about brain stem death and organ donation, and encourage the citizens to donate organs and tissues after death.
- This year under the campaign “Angdaan Jan Jagrukta Abhiyaan” various awareness activities have been organized across the country.
- Under the Abhiyaan, the month of July was observed as the Organ Donation Month.

Organ Transplant and Donation

- Organ Transplantation/ Donation is a surgical procedure in which an organ, tissue or a group of cells are removed from one person and surgically transplanted into another person.
- In India, the organ transplantation is one of the lowest in comparison with the western nations.
- According to the Health Ministry’s data, the number of donors (including deceased) only grew from 6,916 in 2014 to about 16,041 in 2022.

Laws and Rules Governing Organ Transplantation in India:

- **Transplantation of Human Organs Act 1994:** It is the primary legislation **related to organ donation and transplantation in India and is aimed at regulation of removal, storage and transplantation of human organs for therapeutic purposes and for prevention of commercial dealings in human organs.**

- **Transplantation of Human Organs (Amendment) Act, 2011:** It allows swapping of organs and widens the donor pool by including grandparents and grandchildren in the list.

8. Giant radio sources

Context:

A team led by Indian radio astronomers have reported the discovery of 34 new giant radio sources (GRSs) using the giant metrewave radio telescope (GMRT).

About:

- Giant radio sources are massive structures in the universe that emit huge amounts of radio waves.
- They are often associated with active galactic nuclei and are typically found in the central regions of large galaxies.
- Giant radio sources can span millions of light-years. They are some of the largest structures known in the universe, much larger than most galaxies.
- **Cygnus A: One of the most well-known giant radio sources, located about 700 million light-years away.**
- **3C 295: Another prominent example, noted for its large and complex radio structure.**
- **Significance:** Studying giant radio sources helps astronomers understand the processes of galaxy formation and evolution, the role of supermassive black holes, and the interactions between galaxies and their environments.

9. Sucralose

Context:

A recent study from India examining the effects of replacing sucrose or table sugar with an artificial sweetener, sucralose, found no adverse impact on glucose or HbA1c levels and in fact indicated a slight improvement in body mass index (BMI).

About Sucralose:

- **Sucralose is a no-calorie sweetener that can be used to lower one's intake of added sugars while still providing satisfaction from enjoying the taste of something sweet.**
- While some types of sweeteners in this category are considered low-calorie (e.g., aspartame) and others are no-calorie (e.g., sucralose, monk fruit sweeteners, and stevia sweeteners). Collectively, they are often referred to as sugar substitutes, high-intensity sweeteners, nonnutritive sweeteners, or low-calorie sweeteners.
- Like other no-calorie sweeteners, sucralose is intensely sweet. It is about 600 times sweeter than sugar.

10. Eta Carinae**Context:**

Astronomers are closely monitoring Eta Carinae, as it may be on the verge of a spectacular explosion.

About Eta Carinae:

- **It is a hypergiant star with a mass approximately 100 times that of our Sun.**
- **Location:** It is located about 7,500 light-years away in the Carina Nebula, Eta Carinae is one of the most massive and luminous stars known to science, making it an excellent candidate for a supernova.
- Historical records reveal that about 170 years ago, the star underwent a significant outburst, known as the Great Eruption, which temporarily made it one of the brightest stars in the southern sky.
- This event created the Homunculus Nebula, a distinctive hourglass-shaped cloud of gas and dust that surrounds the star.

Unique characteristics:

- **It is the only known star to emit natural laser light, adding to its enigmatic nature.**
- Recently the Hubble Space Telescope highlight the intricate details of the surrounding nebula, including diffraction spikes and radial streaks, which remain unexplained.

- Eta Carinae's eventual supernova will be a monumental event, potentially outshining any supernova observed in recent history, including SN 2006gy.
- When it does explode, it will provide an extraordinary light show visible from Earth and offer invaluable insights into the life cycles of massive stars.

11. Rashtriya Vigyan Puraskar**Context:**

The central government recently announced the full list of the first-ever Rashtriya Vigyan Puraskar (RVP) 2024 awardees.

Rashtriya Vigyan Puraskar (RVP):

- It is a new set of awards introduced by the Government of India in the field of Science, Technology, and Innovation.
- Objective: To recognize the notable and inspiring contributions made by scientists, technologists, and innovators individually or in teams in various fields of science, technology, and technology--led innovation.
- It is one of the highest recognitions in the field of science, technology, and innovation in India.

The awards shall be given in following four categories:

1. **Vigyan Ratna (VR) award will recognize lifetime achievements and contributions made in any field of science and technology.**
2. Vigyan Shri (VS) award will recognize distinguished contributions in any field of science and technology.
3. Vigyan Yuva-Shanti Swarup Bhatnagar (VY-SSB) award will recognize and encourage young scientists up to the age of 45 years who made an exceptional contribution in any field of science and technology.
4. Vigyan Team (VT) award to be given to a team comprising three or more scientists/researchers/innovators who have made an exceptional contribution working in a team in any field of science and technology.

All nominations received for the RVP awards are placed before the Rashtriya Vigyan Puraskar Committee (RVPC), headed by the Principal Scientific Adviser (PSA) to the Government of India.

Eligibility:

- Scientists/ technologists/innovators working in government, private sector organizations, or any individual working outside any organization who have made distinguished contributions in terms of path-breaking research, innovation, or discovery in any field of science, technology, or technology- led innovation shall be eligible for the awards.
- People of Indian origin staying abroad with exceptional contributions benefiting Indian communities or society shall also be eligible for the awards.

Scientists will be selected across 13 domains:

- The award ceremony for all categories of awards will be held on 23rd August (National Space Day). All Awards will have a Sanad and a medal.
- The ISRO- Chandrayan 3 Team will be awarded the Vigyan Team award for their contribution in the field of Space Science and Technology.
- Celebrated biochemist Govindarajan Padmanabhan has been selected as the first recipient of the Vigyan Ratna Puraskar.

12. Optically Stimulated Luminescence (OSL) Dating

Context:

Scientists have recently found the first evidence of earthquakes that can cause rivers to change course, a process known as avulsion using optically stimulated luminescence (OSL) dating.

Optically Stimulated Luminescence (OSL) Dating:

- Optically Stimulated Luminescence (OSL) dating is a cutting-edge scientific technique that has revolutionized the fields of archaeology and geology.

- This method allows researchers to determine the age of sediments and artefacts with remarkable accuracy, providing crucial insights into Earth's history and human civilizations.
- **Principle** – OSL dating is based on the ability of certain minerals, primarily quartz and feldspar, to store energy from environmental radiation and release it as light when stimulated by exposure to light.
- **Process** – Over time, minerals in buried sediments accumulate electrons in their crystal lattice due to exposure to natural radioactivity.
- When these minerals are exposed to light during sampling, they emit a luminescence signal.
- The intensity of this signal is proportional to the time since the mineral was last exposed to sunlight.
- **Advantages** – Can date materials up to about 150,000 years old, with potential extensions to 500,000 years.
- Applicable to a wide range of sediments, including those unsuitable for radiocarbon dating.
- Provides direct dating of depositional events.
- **Relevance to India** – Used in dating Indus Valley Civilization sites, providing new insights into the chronology of ancient Indian cultures.
- Applied in studying the evolution of river systems like the Ganga and Yamuna.
- Helpful in understanding climate change impacts on the Indian subcontinent over geological timescales.
- **Recent Developments** – Single-grain OSL dating has improved precision and allowed dating of partially bleached sediments.
- Integration with other techniques like radiocarbon dating for cross-validation.
- **Limitations** – Requires specialized equipment and expertise.

- Accuracy can be affected by incomplete bleaching of sediments during deposition.

Applications:

- **Archaeology** – Dating of pottery, burnt flints, and sediments associated with human occupation.
- **Geology** – Dating of sedimentary deposits, paleo-environmental reconstructions, and studying tectonic events.
- **Paleoclimatology** – Understanding past climate changes through dated sediment records.

13. Tri-boelectric Nanogenerator (TENG) Technology**Context:**

The Indian Institute of Technology (IIT) Indore has designed special shoes for soldiers equipped with a Tri-boelectric Nanogenerator (TENG) Technology.

About Tri-boelectric Nanogenerator (TENG) Technology:

- *It is a self-powered, feasible solution to convert mechanical energy into electricity.*
- The electricity will get stored in a device fixed in the soles and can be used to operate small appliances
- Features: It is equipped with a global positioning system (GPS) and radio frequency identification (RFID) technologies, these shoes can help determine the location of personnel in real-time.

Applications:

- The TENG technology can be used to track the location of senior citizens suffering from Alzheimer's, school children and climbers and can help monitor the attendance and work of workers in factories.
- These shoes can also accurately analyse the movements of sportspersons to improve their performance.
- For trekking and mountaineering enthusiasts, the shoes provide reliable tracking during expeditions with their self-powered GPS feature, ensuring safety and efficient navigation.

14. Antibiotics use**Context:**

Antibiotics have revolutionised medicine by curing infections and saving lives.

About

- The human body hosts about 38 trillion microbial cells, outnumbering our own cells.
- The gut microbiome is crucial for digestion, immune support, nutrient production, and pathogen protection.
- The irrational and excessive use of antibiotics poses significant risks, particularly to the human microbiome.
- Overuse and misuse in humans, animals, and agriculture lead to antimicrobial resistance (AMR) and disrupt the microbiome.

Reasons of Irrational Antibiotic Use

- **Self-Medication:** Many individuals self-medicate with antibiotics without proper medical guidance, often using them for viral infections like the common cold, where they are ineffective.
- **Overprescription:** Healthcare providers sometimes prescribe antibiotics unnecessarily, either due to diagnostic uncertainty or patient pressure.
- **Agricultural Use:** The use of antibiotics in livestock to promote growth and prevent disease contributes to the development of antibiotic-resistant bacteria, which can transfer to humans.

Consequences

Dysbiosis: Antibiotics, especially broad-spectrum ones, do not discriminate between harmful pathogens and beneficial bacteria.

- This can lead to dysbiosis, a condition characterized by an imbalance in the microbial community.
- Dysbiosis can persist for months or even years after a single course of antibiotics.

Immune System Impairment: A healthy microbiome is vital for a robust immune system.

- Disruption of the microbiome can weaken immune defenses, making the body more susceptible to infections and autoimmune diseases.

Metabolic Disorders: The gut microbiome plays a crucial role in regulating metabolism.

- Dysbiosis can interfere with metabolic processes, potentially leading to conditions such as obesity, diabetes, and metabolic syndrome.

Mental Health Effects: The gut-brain axis links the gut microbiome with the brain.

- Dysbiosis can alter neurotransmitter levels and brain chemistry, affecting mood, cognition, and mental health conditions like anxiety and depression.

Increased Risk of Chronic Diseases: Long-term disruption of the microbiome has been associated with an increased risk of chronic diseases, including inflammatory bowel disease (IBD) and irritable bowel syndrome (IBS).

15. Comet Swift-Tuttle

Context:

The Perseid meteor shower will peak on the night of August 11 and before dawn on August 12, 2024. Visible from mid-July to late August, this annual event promises ideal meteor-watching conditions. The 50% illuminated moon will set around midnight, providing dark skies until dawn.

About Comet Swift-Tuttle:

- The Perseid meteor shower occurs annually when Earth passes through debris left by Comet Swift-Tuttle.
- Comet Swift-Tuttle, discovered independently by astronomers Lewis Swift and Horace Tuttle in 1862, is the source of the Perseid meteor shower.
- The comet's nucleus, about 16 miles (26 kilometers) wide, last approached Earth in 1992 and will pass again in 2126. It may be visible to the naked eye, similar to the Hale-Bopp comet of 1997.

About Meteoros and Meteor Shower:

- Meteors—"shooting stars"—are small pieces of rock or dust that burn up as they strike Earth's atmosphere.

- Scientists estimate that about 48.5 tons (44 tonnes or 44,000 kilograms) of meteoritic material falls on Earth each day. Almost all the material is vaporized in Earth's atmosphere, leaving a bright trail fondly called "shooting stars."
- **Meteor showers: Several meteors per hour can usually be seen on any given night. Sometimes the number increases dramatically—these events are called meteor showers.**
- It occurs annually or at regular intervals as the Earth passes through the trail of dusty debris left by a comet. Meteor showers are usually named after a star or constellation that is close to where the meteors appear in the sky. Perhaps the most famous are the Perseids, which peak in August every year. Every Perseid meteor is a tiny piece of the comet Swift-Tuttle, which swings by the Sun every 135 years.

16. Xerogel

Context:

Researchers have developed a porous composite xerogel dressing incorporating Silica Nanoparticles and calcium that can help blood clot rapidly and provide relief for uncontrolled haemorrhage.

About Xerogel:

- It is a solid form of a gel obtained by drying it with unhindered shrinkage.
- The drying process of xerogels involves solvent evaporation under standard conditions using conventional methods.
- Xerogels are mesoporous materials having high thermal stability.
- The most important properties of xerogel are as follows: nontoxic, cost-effective, biocompatible and high surface area, High porosity and can easily be modified
- The most common examples of xerogels are carbon-based xerogels and silica-based aerogels.

- **Application:** It is used as mesoporous materials, and also in drug delivery systems.

What is the Difference Between Aerogel and Xerogel?

- **Aerogels form when the liquid from the gel is extracted at a supercritical state, whereas xerogel forms when the liquid from the gel is evaporated at room temperature.**
- **Moreover, aerogel has a comparatively larger surface area than xerogel.**

Highlights of the research:

- Recently, researchers have developed a highly porous spongy xerogel haemostatic dressing supplemented with substances that bind to a receptor inside a cell (agonists) like silica nanoparticles (SiNPs) and calcium.
- This material increased the blood clotting index by 13-fold in comparison to commercial dressing clotting capacity.
- The well-characterized xerogel showed presence of multiple pores of around 30 μm size that contributed to the high absorbance capacity of the dressing. The supplements improved the clotting capacity and resulted in quick absorbance of blood.

17. Collision avoidance system

Context:

Recent series of train accidents has brought into sharp focus the safety mechanisms needed to prevent such tragedies.

What is a collision avoidance system?

- It is a collection of technologies to help a vehicle steer clear of another vehicle or obstacles.
- For example, a CAS device fit on a train will be designed to help that train avoid colliding with another train.
- Most CAS devices require two types of information, preferably in real-time: the locations of all the other vehicles and the location of this vehicle relative to those vehicles.

Collision Avoidance Systems (CAS): Kavach

- It is an indigenously developed Automatic Train Protection (ATP) system by the Research Design and Standards Organisation (RDSO) in collaboration with the Indian industry. Its aim is to avoid collision between two locomotives.

Features:

- It is a state-of-the-art electronic system with Safety Integrity Level-4 (SIL-4) standards.
- It is one of the cheapest, SIL-4 certified technologies where the probability of error is 1 in 10,000 years.

Purpose: It is meant

- To provide protection by preventing trains to pass the signal at Red (which marks danger)
- To avoid collision between two locomotives.

It is a set of electronic devices and Radio Frequency Identification devices installed in locomotives, in the signalling system as well the tracks, that talk to each other using ultra-high radio frequencies to control the brakes of trains and also alert drivers, all based on the logic programmed into them.

Since 2016, the railways have been carrying out field tests for Kavach on passenger trains.

18. New international convention against cybercrime.

Context:

The member states of the United Nations have finalized a new international convention against cybercrime.

About

- The draft convention is expected to be adopted by the General Assembly later this year, thus becoming the first global legally binding instrument on cybercrime.
- **Background:** The road to this convention began more than five years ago when the United Nations recognized the new challenges to international security and criminal law.

- The Ad Hoc Committee was established in 2019 and the draft convention was finally finalized in August 2024.

About the Convention

- **Aim:** To strengthen international cooperation in the fight against cybercrime, coordinate law enforcement efforts, and promote technical assistance and capacity building in member states.
- **Tools:** It provides states with a range of tools to effectively combat crimes such as terrorism, drug trafficking, human trafficking, arms smuggling, and other criminal activities facilitated by modern information technologies.
- The key objective is to improve the capabilities of national authorities in the prevention, detection, investigation, and prosecution of cybercrime.
- Convention includes the definition of criminal offenses such as illegal access to information systems, illegal interception, data manipulation, and system interference.
- It deals with the criminal liability of legal persons, the seizure and confiscation of the proceeds of crime, and international cooperation in criminal prosecution and the preservation of evidence.

What is Cybercrime?

- Cybercrime refers to criminal activities that involve the use of computers, networks, and digital technologies.
- It encompasses a wide range of illicit activities conducted in the virtual space, often with the intent to compromise, damage, or gain unauthorized access to computer systems, networks, and data.
- Cybercriminals employ various techniques and tools to exploit vulnerabilities in networks, and they may target individuals, organizations, or even governments.

Common types of Cybercrime include:

- **Hacking: Unauthorized access to computer systems or networks to steal, alter, or destroy data.**

- **Phishing: Deceptive attempts to acquire sensitive information, such as usernames, passwords, and financial details, by posing as a trustworthy entity.**
- **Malware: Malicious software designed to disrupt, damage, or gain unauthorized access to computer systems. This includes viruses, worms, trojans, ransomware, and spyware.**
- **Identity Theft:** Stealing and using someone's personal information, such as social security numbers or credit card details, for fraudulent purposes.
- **Cyber Espionage: Covert activities aimed at gaining unauthorized access to sensitive information for political, economic, or military purposes.**
- **Cyberbullying:** Using digital platforms to harass, threaten, or intimidate individuals.
- **Online Fraud:** Engaging in fraudulent activities, such as online scams and financial fraud, to deceive and exploit victims for monetary gain.

Cybercrime in India:

- Chief executive officer of Indian Cyber Crime Coordination Centre (I4C), mentioned that on average 5,000 cyber complaints are registered in the country every day and around 40-50% originate outside the country.
- Most cyber-crimes were reported from Haryana, Telangana, Uttarakhand, Gujarat and Goa. Among Union Territories, most complaints came from Delhi, followed by Chandigarh and Puducherry.

Major cyber-attacks around the world:

- **Stuxnet** was a malicious computer worm, targeted the Iran nuclear programme.
- **WannaCry ransomware crypto worm**, which infected well over 2,30,000 computers in 150 countries.
- **'Petya' Malware** severely affected banks, electricity grids and a host of other institutions across Europe and the United Kingdom, as also the U.S. and Australia.

- **Shamoon Computer Virus** which was directed mainly against oil companies such as SA ARAMCO (Saudi Arabia) and RasGas (Qatar).

19. Gymnema Sylvestre

Context:

Recently, researchers have identified *Gymnema Sylvestre*, commonly known as Gurmar, among several medicinal plants on Brahmayoni Hill in Gaya, Bihar.

About *Gymnema Sylvestre* (Gurmar)

- *Its unique properties include its ability to reduce blood sugar levels, attributed to Gymnemic acid, which blocks intestinal sugar absorption.*
- It also helps in Lipid Metabolism, Flavonoids. It combines with Metformin (the first-line diabetes drug).
- It has already been utilised in developing the anti-diabetic drug BGR-34.
- BGR-34 combines Gurmar with other potent phyto-ingredients like Daruharidra, Giloy, Vijaysar, Manjishtha, and Fenugreek. Together, they form a formidable team against diabetes.

20. INS Arighat

Context:

India is now all set to commission its second nuclear-powered submarine, INS Arighat, armed with nuclear missiles for strategic deterrence.

About:

- *INS Arihant is India's first indigenously built nuclear-powered, nuclear-armed submarine.*
- *It was commissioned into the Strategic Forces Command (SFC) in 2018 and is operated by Indian Navy.*
- SFC is the tri-service formation that handles and operates all nuclear weapons and is directly under the command and control of the Prime Minister.
- *INS Arighat is yet to be commissioned, India's second indigenously built nuclear-powered, nuclear-armed submarine.*
- It was constructed at the Navy's Submarine Building Centre (SBC) in Visakhapatnam.

21. Mpox

Context:

Recently, The World Health Organization (WHO), declared mpox as a "public health emergency of international concern" (PHEIC).

About:

- Mpox is a viral zoonotic disease.
- *Mpox is a DNA virus.*
- The disease mpox (formerly monkeypox) is caused by the monkeypox virus (commonly abbreviated as MPXV), an enveloped double-stranded DNA virus of the Orthopoxvirus genus in the Poxviridae family.
- *Human-to-human transmission of mpox occurs through direct contact with body fluids, lesions, prolonged face-to-face contact, including sexual contact, and indirect contact with contaminated clothing or bedding.*
- *The first human case of mpox was recorded in 1970 in the Democratic Republic of the Congo (DRC).*
- There are two known types (clades) of mpox virus — one that originated in Central Africa (Clade I) and one that originated in West Africa (Clade II).

22. Biosurfactant

Context:

A research group critically analysed the application of biosurfactants in food industries, highlighting the challenges in the large-scale commercialization of biosurfactants.

About Biosurfactant:

- Biosurfactants are surface-active molecules produced by microorganisms, either on the cell surface or secreted extracellularly.
- They form a thin film on the surface of microorganisms and help in their detachment or attachment to other cell surfaces.

- They are involved in regulating the motility of bacteria and quorum sensing.

Features:

- Microbial biosurfactants obtained from various microbial sources exhibit high emulsification, solubilization, foaming, adsorption, and other physical characteristics.
- They are very stable in a wide range of pH, temperature, and salinity, making them suitable for food applications.
- These are eco-friendly biomolecules and do not impart toxic effects; therefore, they can be considered safe for human consumption.

Applications

- These are used in the food industry like bakeries and salad dressings.
- These can be used for heavy metal removal from vegetables to boost immunity in fish, providing a protective effect against the pathogen.
- Also, it can be employed in food products as a natural antioxidant to prevent early spoilage.

What are surfactants?

- These are molecules that slither across surfaces of oil and water, water and oil, or air and water to form an emulsion.
- Surfactants are very useful in the food industry as lubricants and foamers to emulsify fats in batters, improve shelf life, as dispersing agents, and retain moisture.
- **Issues:** However, the accelerated usage of synthetic food additives and emulsifiers in dietary goods has led to imbalances in the microbiome of the body, gut-related disorders and affect the intestinal barrier permeability leading to declination of beneficial microbiota.



@RCREDDYIAS

For other months issues and updates
Join our telegram channel

23. Wolbachia**Context:**

Reducing mosquito-borne illnesses through proven interventions has an immense potential to reduce the burden on our health systems and productivity.

About Wolbachia:

- Wolbachia is not a vaccine. It is a bacterium used in vector control programs to reduce the transmission of dengue and other diseases by infecting mosquitoes.
- Wolbachia is commonly found in insects, including butterflies, bees, and beetles.
- However, Wolbachia is not usually found in the Aedes aegypti mosquito, the primary species responsible for transmitting human viruses such as Zika, dengue, chikungunya and yellow fever.
- DengiAll is India's indigenous tetravalent dengue vaccine.
- Once introduced into mosquitoes, Wolbachia causes cytoplasmic incompatibility, which disrupts reproduction and reduces the number of viable offspring. This can lead to a decline in the mosquito population.

24. System of water elevators**Context:**

The first ship passed through the Panama Canal on August 15, 1914, exactly 110 years ago.

System of water elevators:

- The Panama Canal is not a simple channel of water connecting two larger water bodies — it is a sophisticated, highly-engineered system which uses a system of locks and elevators to take ships from one end to the other.
- This is needed because the two oceans that the Panama Canal connects do not lie at the same elevation, with the Pacific slightly higher than the Atlantic. This difference means that for a ship entering the canal through the Atlantic, it needs to gain elevation during its journey to the Pacific. This is achieved using a lock system which lifts and drops vessels to the required sea level at either end of the canal.

- Basically, locks are either flooded (to gain elevation) or drained (to lose elevation), and act as water elevators. In total, the system comprises three sets of locks — 12 locks in total — which are serviced using artificial lakes and channels.



Threat of climate change:

- The Panama Canal needs massive amounts of fresh water to facilitate the passage of ships using this system of locks. Most of this water is supplied from Lake Gatun using the force of gravity (no pumps are needed).
- According to a report by The New York Times, the passage of a single ship needs more than 50 million gallons (almost 200 million litres) of water. Thus, every day, the canal uses two-and-a-half times the amount of water consumed by the 8 million residents of New York City.
- Last year, lower water levels in Lake Gatun meant that far fewer ships could pass through the canal every day, and those which did pass, often had to reduce their cargo to make the passage.

25. Californium

Context:

Recently, Bihar police have seized approximately 50 grams of californium, a highly radioactive element.

About Californium:

- It is a silvery-white synthetic radioactive metal with the atomic number 98 on the periodic table.
- It was first synthesised in 1950 by a team at the University of California, Berkeley.
- The element is named after the American state of California and the university where it was discovered.
- It is not found naturally and is produced through nuclear reactions, specifically by bombarding curium with helium ions.

Properties

- It is known for its intense radioactivity and is considered both valuable and hazardous.**
- Californium is a member of the actinide series in the periodic table.
- The element's most notable isotopes include Cf-251, which has a half-life of 898 years and is the most stable, and Cf-249 and Cf-250, which have shorter half-lives.

Applications:

- It is a very strong neutron emitter and is used in portable metal detectors for identifying gold and silver ores, to help identify water and oil layers in oil wells, and detect metal fatigue and stress in aeroplanes.
- Its primary applications include starting nuclear reactors, optimising coal power plants, and treating certain cancers.**
- It is also used in radiography, gold prospecting, and as a neutron source in various industrial applications.

26. Forever chemicals**Context:**

American researchers have found a method to be able to trace the origin and the destination of forever chemicals.

Why in the news?

- Researchers used a technique which involves magnetic fields and radio waves to track the spread of forever chemicals in the ecosystems across the globe.
- The technique involves passing samples through a strong magnetic field then reading the burst of radio waves their atoms emit.
- This reveals the composition of carbon isotopes in the molecule and gives the chemical its fingerprint.

About:

- Forever chemicals are generally useful in applications such as water-proofing, heat resistance, detergents, food packaging and non-stick technologies.
- They are known to stay in the environment virtually forever and contribute to environmental degradation which adversely impacts the health of all organisms including human beings
- Forever chemicals are scientifically known as per- and polyfluoroalkyl substances (PFAS).
- Many PFAS such as PFOS and PFOA pose health and environmental concerns because they are persistent organic pollutants or “forever chemicals”; they have half-lives of up to over 8 years due to a carbon-fluorine bond, one of the strongest in organic chemistry.

What are the health risks of PFAS?

- Testicular, kidney, liver and pancreatic cancer.
- Reproductive problems.
- Weakened childhood immunity.
- Low birth weight.
- Endocrine disruption.
- Increased cholesterol.
- Weight gain in children and dieting adults.

27. SSLV**Context:**

The Indian Space Research Organisation (ISRO) successfully launched the third developmental flight of the Small Satellite Launch Vehicle (SSLV) from the Satish Dhawan Space Centre.

About:

- The SSLV-D3 placed the Earth observation satellite EOS-08 precisely into orbit.
- It also marks the completion of ISRO/Department of Space's SSLV Development Project.
- NewSpace India Limited (NSIL), ISRO's commercial arm, and India's private space industry can now produce SSLVs for commercial missions.

What is an SSLV?

- ISRO's Small Satellite Launch Vehicle (SSLV) is a three-stage Launch Vehicle configured with three Solid Propulsion Stages.
- It also has a liquid propulsion-based Velocity Trimming Module (VTM) as a terminal stage, which can help adjust the velocity as it prepares to place the satellite.
- The SSLV can launch satellites weighing up to 500kg and accommodate multiple satellites.

Launch Vehicles

- Launchers or Launch Vehicles are used to carry spacecraft to space.
- India has three active operational launch vehicles: Polar Satellite Launch Vehicle (PSLV), Geosynchronous Satellite Launch Vehicle (GSLV), Geosynchronous Satellite Launch Vehicle Mk-III (LVM3).
- PSLV: PSLV has been a versatile launch vehicle deployed for launching all the three types of payloads viz. Earth Observation, Geo-stationery and Navigation. It has got highest success rate and considered as work horse of ISRO.

- **GSLV with indigenous Cryogenic Upper Stage** has enabled the launching up to 2 tonne class of communication satellites.

The LVM3 is the next generation launch vehicle capable of launching 4 tonne class of communication satellites and 10 tonne class of payloads to LEOs.

- The vehicle was developed with completely indigenized technologies including the C25 cryo stage.
- The launch vehicle has a track record of all successful launches even from the first development flight.
- The Human rated LVM3 is identified as the launch vehicle for Gaganyaan mission, which is named as HRLV.

28. Food Safety and Standards Authority of India

Context:

The Food Safety and Standards Authority of India (FSSAI) has launched a project to assess microplastic contamination in food products and develop methods for its detection.

- The primary objectives of the project include developing standard protocols for micro/nano-plastic analysis, conducting intra- and inter-laboratory comparisons, and generating critical data on microplastic exposure levels among consumers
- **Light microscopy and spectroscopy methods is used to detect microplastics in environmental samples.**

About:

- **They are defined as plastics less than five millimetres in diameter.** It can be harmful to our ocean and aquatic life.
- Under the influence of solar UV radiation, wind, currents, and other natural factors, plastic fragments into small particles, termed microplastics (particles smaller than 5 mm) or nanoplastics (particles smaller than 100 nm).
- **They accumulate in the tissues of marine organisms, and they affect the entire food chain.**

Classification:

Primary Microplastics: They are tiny particles designed for commercial use and microfibers shed from clothing and other textiles.

- E.g., microbeads found in personal care products, plastic pellets, and plastic fibres.

Secondary Microplastics: They are formed from the breakdown of larger plastics, such as water bottles.

- Exposure to environmental factors, primarily solar radiation and ocean waves, is the cause of this breakdown.

Applications of Microplastics:

- **Medical and Pharmaceutical Uses:** Used in targeted drug delivery due to the capacity to absorb and release chemicals effectively.
- **Industrial Applications:** Used in air-blasting technology for cleaning machinery and in the production of synthetic textiles.
- **Cosmetics and Personal Care Products:** Used as exfoliating agents in facial scrubs, toothpaste, and other personal care products.

29. Blue Moon

Context:

Raksha Bandhan (Rakhi) coincided with a “super blue moon”.

About:

- **Super Blue Moon: It is a rare event where the full moon is both a “blue moon” and a “super moon.”**
- **Super blue moons are rare, occurring roughly every 10 to 20 years.**
- **Super Moon:** Occurs when the moon is closest to Earth in its elliptical orbit (perigee) and is also a full moon. It appears about 14% larger and 30% brighter than a full moon at apogee (farthest point)
- The term “supermoon” was coined by astrologer Richard Nolle in 1979.

Blue Moon: Though the expression “once in a blue moon” implies a rare or unusual occurrence, a blue moon is not that rare an astronomical phenomenon. There are a couple of definitions of a blue moon.

- It is a second full moon in a single calendar month.
- Or the third full moon in a season with four full moons.
- The first recorded use of “Blue Moon” in English dates from 1528.

Visibility: The moon won’t actually appear blue; the term “blue” refers to rarity, not colour.

- The moon might appear more yellow or orange when closer to the horizon due to atmospheric scattering.

30. Hayflick limit

Context:

Biomedical researcher Leonard Hayflick, who discovered that normal somatic cells can divide (and thus reproduce) only a certain number of times, died recently.

About Hayflick limit:

- It refers to the maximum number of times a cell can divide.
- It's named after scientist Leonard Hayflick, who discovered this phenomenon.
- The limit plays a crucial role in aging and the development of age-related diseases.

Hayflick found that cells go through three phases.

- The first is rapid, healthy cell division.
- In the second phase, mitosis slows.
- In the third stage, senescence, cells stop dividing entirely.
- They remain alive for a time after they stop dividing, but sometime after cellular division ends, cells do a particularly disturbing thing: Essentially, they commit suicide.
- Once a cell reaches the end of its life span, it undergoes a programmed cellular death called apoptosis.

Hayflick’s discovery got further weight after researchers in the 1970s discovered telomeres.

- Telomeres are repetitive DNA sequences at the very end of these strands, meant to protect the chromosome.
- Crucially, with each cell division, these telomeres get slightly shorter. Eventually, the telomere loss reaches a critical point at which cell division ends.
- That said, while shortening telomeres is related to aging, the exact relationship between telomere length and lifespan remains unclear.

31. BPalm regimen

Context:

India is set to roll out training of healthcare professionals in administering the BPalm regimen.

What is the BPalm regimen?

- It is composed of bedaquiline, pretomanid, linezolid and moxifloxacin (BPalm) for treating multidrug-resistant or rifampicin-resistant tuberculosis (MDR/RR-TB).
- Recommended by the World Health Organisation (WHO) in 2022, currently, TB patients in nearly 40 countries have access to this new regimen.

Significance

- The BPalm protocol is more effective, has a shorter duration of treatment (six months versus the prevailing 18-24 months), fewer side effects and, most importantly, prevents transmission, making it a pivotal tool in containing and managing TB.
- India, which accounts for around 27 per cent of global TB cases, stands to benefit significantly. For example, this move is expected to boost the country’s National TB Elimination Programme, which aims to eliminate the disease by 2025.
- Tornadic waterspouts are actual tornadoes that form over water or move from land to water.

- Fair-weather waterspouts, which are much more common, form over only water. As their name suggests, they are formed during fair weather.
- They are less dangerous and usually small.

Experts believe that as ocean temperatures are soaring, the frequency of waterspouts is increasing.

32. Polymeric nanoparticles

Context:

Recently, scientists at Agharkar Research Institute (ARI) under the Department of Science & Technology (DST) have developed a nanoparticle-based drug delivery system.

Drug delivery method using polymeric nanoparticles:

- It is a unique method developed of drug delivery using Nikkomycin-loaded polymeric nanoparticles.
- **Nikkomycins-** Nikkomycins are nucleoside amide antibiotics produced by *Streptomyces tendae* Tü 901 and are known to show antifungal, anti-insecticidal, and acaricidal activities.
- They work by interfering with the building of the fungal cell wall which results in the fungal cell breaking open.
- The specific agent nikkomycin Z has weak activity against *Aspergillus fumigatus* which may be of benefit when used with other medications.
- **The drug-loaded nanoparticles were effective in disrupting the growth of *Aspergillus* species.**

Aspergillus fumigatus is a species of fungus in the genus *Aspergillus* and is one of the most common *Aspergillus* species to cause disease in individuals with immunodeficiency.

- **Streptomyces-** It is the largest genus of actinobacteria comprising high GC (guanine and cytosine) content in their genomic DNA.
- They are Gram-positive saprophyte and abundant in soil, water (fresh and sea), and air.
- One can also find this group of bacteria in association with plants and animals.

ARI have used a chitin synthesis fungicide, Nikkomycin, produced by the bacterial *Streptomyces* spp. to develop Nikkomycin loaded polymeric nanoparticles.

Polymeric Nanoparticles- It refers to solid particles composed of macromolecular polymers, with particle size ranging from 10 to 1000 nm.

- It can protect the encapsulated macromolecules from enzymatic degradation and change the dynamic behaviour and tissue distribution of the encapsulated drugs in vivo.

Chitin - Chitin is the most abundant amino-polysaccharide polymer occurring in nature and is the building material that gives strength to the exoskeletons of crustaceans, insects, and the cell walls of fungi.

- Chitin is absent in the human body, making this a targeted approach.

The nano-formulation developed was found to be free of cytotoxic and hemolytic effects.

The ARI team is hopeful about the method's application in development of inhalation nano-formulations against pulmonary aspergillosis.

Benefits - It may benefit patients with asthma, cystic fibrosis, HIV, cancer, lung diseases, and those on long-term corticosteroid medications.

- Nanoparticles enable controlled and effective drug release, with polymeric nanoparticles being the most advanced delivery method.
- Safety and potential applications- The Nano formulation was free of cytotoxic and hemolytic effects, indicating safety for use.

33. Ethanol Blending Programme

Context:

Recently, maize import has increased from April to June of this year compared to last year at a time when maize has been used to produce more fuel ethanol to compensate for restrictions on using sugarcane products.

About Ethanol Blending Programme (EBP):

- **Launched in:** The Ethanol Blending Programme was launched in January 2003.
- **Aim:** The programme sought to promote the use of alternative and environment friendly fuels and to reduce import dependency for energy requirements.
- **Used Source:** Sugarcane and its by-products like B molasses are the major source of ethanol production in India. Other sources for producing ethanol are corn, rice, and barley.
- **Current Ethanol Blending Target:** The Indian government has pledged to meet a 20% ethanol blending target by 2025-26. This target is referred to as E20 (20% ethanol blending with petrol) by 2025.

- The OPV includes a live, weakened poliovirus that temporarily replicates in the intestine, stimulating the immune system to produce antibodies and develop immunity.
- On rare occasions, in under-immunized populations, the excreted vaccine virus can circulate, undergo genetic changes, and potentially revert to a form capable of causing paralysis. This is known as circulating vaccine-derived poliovirus (cVDPV).
- Since 2000, over 10 billion doses of OPV have been administered globally, resulting in 24 cVDPV outbreaks in 21 countries, with fewer than 760 cases.

35. Quantum nonlocality

Context:

New study demonstrated that a universal standard for measuring quantum nonlocality is impossible.

About:

Quantum nonlocality describes a strange connection between distant physical objects, one that doesn't allow for faster-than-light communication.

- It describes a situation where particles that are entangled can influence each other instantaneously, regardless of the distance separating them.
- This phenomenon appears to violate the classical idea that information or influence cannot travel faster than the speed of light.

The new research broadens the potential applications of quantum non-local correlations, which are already used in secure communication, random number generation, and cryptographic key creation.

This discovery adds a new layer to the understanding of quantum mechanics, highlighting the complexity and uniqueness of quantum nonlocality as a valuable and diverse resource.

Ethanol for blending

With the government restricting the use of B-heavy molasses and sugarcane juice for ethanol production from December 2023, grain-based ethanol production has increased to maintain blending percentages

Ethanol supplied to oil marketing companies

Supply year	C-heavy molasses	B-heavy molasses	Sugarcane juice	Sorghum	Damaged grains	Maize	Total in litre crore; blending % in brackets
2019-20	74	88	15	0	36	0	173 (5.00)
2020-21	39	183	39	2	29	0	302 (8.10)
2021-22	11	265	85	49	24	0	434 (10.02)
2022-23	6	235	128	74	32	32	506 (12.06)
2023-24*	38	95	56	0	76	135	401 (13.90)

Supply years are December-November; December to October for 2022-23 and November to October for 2023-24

*Data available only for November-June

Shortage: Sugar mill workers load harvested sugarcane on to a tractor trolley in Sangli district, in Maharashtra, in 2022. REUTERS

Expanding sugarcane cultivation would redirect irrigation water from essential food-grain crops, exacerbating concerns about agricultural sustainability.

To make up for the shortfall due to restrictions on B-heavy molasses, grain-based distilleries, mainly maize, have likely been operating at full capacity to keep up with the blending percentages this year.

34. Vaccine-derived poliovirus

Context:

A vaccine-derived polio case has been confirmed in a two-year-old child from Tikrikilla, Meghalaya.

About:

- Vaccine-derived poliovirus is a documented variant of poliovirus that originates from the strain used in the oral polio vaccine (OPV).

36. Genome editing

Context:

A recent breakthrough in plant genome editing comes from a collaborative effort between the ICAR-National Rice Research Institute in Cuttack, India, and Pennsylvania State University, USA.

About Genome editing:

- **Genome editing is a powerful tool that allows scientists to make precise changes to the Deoxy-Ribonucleic Acid (DNA) sequence of living organisms.**
- This technology has vast applications in agriculture, where it can be used to enhance crop yields, improve resistance to pests and diseases, and introduce desirable traits like drought tolerance.
- The most commonly known genome-editing tool is CRISPR, which has revolutionised genetic research due to its precision and efficiency.

CRISPR and its limitations in plant genome editing:

- CRISPR technology, particularly using proteins like Cas9 and Cas12, has been widely used in genome editing.
- These proteins work by cutting DNA at specific locations, allowing scientists to remove, add, or replace genetic material.
- **However, a major limitation in plant genome editing has been the size of these proteins, which are often too large to be efficiently accommodated by plant cells.**
- This has created a need for smaller, more efficient genome-editing tools that can work effectively in plant systems.

The ISDra2TnpB genome editor:

- Researchers have developed a new genome-editing tool called ISDra2TnpB, derived from the bacteria *Deinococcus radiodurans*.
- **This tool is significantly smaller than the traditional CRISPR-associated proteins like Cas9 and Cas12, making it more suitable for use in plant cells.**

Key Features of ISDra2TnpB:

- **Size advantage:** ISDra2TnpB is less than half the size of Cas9 and Cas12, allowing for more efficient delivery and function within plant cells.
- **High editing efficiency:** The tool has demonstrated a 33.58% editing efficiency in average plant genomes, making it a promising option for various crops.
- **Versatility:** The researchers showed that ISDra2TnpB is effective in editing both monocot plants (like rice) and dicot plants (like Arabidopsis).
- **Base editing capabilities:** The team further enhanced the tool by creating a hybrid base editor that can swap single nucleotides in the DNA sequence, opening up new possibilities for precise genetic modifications.

Potential applications in agriculture: The development of ISDra2TnpB has significant implications for agriculture, particularly in improving crop resilience and productivity. For example, this tool could be used to:

- **Reduce crop susceptibility to pests:** By editing genes that make crops vulnerable to pests, ISDra2TnpB could help develop more pest-resistant varieties.
- **Enhance nutritional value:** The tool could be used to remove anti-nutrient factors from crops, improving their nutritional content.

Increase crop resilience to environmental stress: ISDra2TnpB could help create shorter rice crops that are less prone to damage during cyclones, a common problem in cyclone-prone regions.

37. BHISHM

Context:

Recently, India has committed to donating four BHISHM (Bharat Health Initiative for Sahyog Hita & Maitri) Cubes to Ukraine, aimed at enhancing emergency medical care amidst the ongoing conflict with Russia.

What is BHISHM?

- **Full form:** Bharat Health Initiative for Sahyog, Hita, and Maitri.
- **Purpose:** Provides compact, mobile medical units for emergency care, designed to deliver medical facilities swiftly and effectively.

Key features of BHISHM cubes:

Compact and organised: Medical supplies and equipment are packed into 15-inch cubical boxes.

- These boxes are organized based on injury types and medical needs, making them efficient for quick deployment in emergencies.

Transport flexibility: The cubes are mounted on an adjustable framework, allowing them to be transported via multiple modes, including air, sea, land, and drone.

- Each cube weighs up to 20 kg and is designed to be carried by an individual.

Mother and BHISHM cubes:

- 36 mini cubes combine to form one mother cube.
- Two mother cubes combine to form one BHISHM Cube.
- One Mother Cube offers first-line care, shelter, and food for up to five people for 48 hours.
- The second mother cube is equipped for surgical care, handling 10-15 basic surgeries per day.

Ease of use and management: Medicines and equipment are classified, with RFID inventory management and real-time stock updates.

- Additionally, a dedicated app and a tablet with support for 180 languages are provided for operational instructions.

Capacity and Features:

- Each BHISHM Cube can handle around 200 emergency cases, including trauma, burns, fractures, and shock.
- The cubes are capable of supporting basic surgeries and can generate their power and oxygen for limited durations.

- **Technological Integration:** BHISHM cubes incorporate Artificial Intelligence (AI) and data analytics for effective coordination, real-time monitoring, and efficient management of medical services.

Project Aarogya Maitri:

- **Objective:** Part of India's initiative to provide essential medical supplies to developing countries affected by disasters or humanitarian crises.
- **Importance:** Highlights India's commitment to international humanitarian assistance.

38. Tanager-1 Satellite**Context:**

Recently, NASA has launched a satellite to track methane emissions.

About Tanager-1 Satellite:**Launch details:**

- **Launch vehicle:** SpaceX Falcon 9 rocket.
- **Launch site:** Vandenberg Space Force Base, California.
- **Development collaboration:** Jointly developed by NASA's Jet Propulsion Laboratory and other partners.

Mission purpose:

- **Primary objective:** Detection of major carbon dioxide (CO₂) and methane (CH₄) emissions.
- **Environmental focus:** Targeting key greenhouse gases that significantly contribute to global warming.

Technological features:

Spectrometer technology: Utilizes advanced imaging spectrometer from NASA's Jet Propulsion Laboratory.

Emission tracking:

- **Method:** Measures light wavelengths reflected from the Earth's surface to identify specific atmospheric compounds.

- **Spectral fingerprints:** Identifies and quantifies greenhouse gases like CO₂ and CH₄ by their unique infrared signatures.

Coverage capacity: Capable of monitoring emissions across 130,000 square kilometres daily.

Data access: Plume data will be publicly available to support global emission reduction efforts.

Significance of Methane Monitoring:

Global warming impact:

- **Potency:** Methane is approximately 80 times more effective than CO₂ at warming the atmosphere over 20 years.
- **Contribution:** Accounts for 30% of global warming since the Industrial Revolution.
- **Health implications:** Linked to the formation of ground-level ozone, contributing to up to one million premature deaths annually.

40. Diamond

Context:

- The newly discovered diamond is second to the 3,106-carat Cullinan Diamond, which was found in South Africa over a century ago.
- Botswana, a leading diamond producer, relies heavily on the diamond industry, which constitutes 30% of its GDP and 80% of its exports.
- The diamond was unearthed using advanced X-ray transmission technology, which enhances the recovery of large stones without causing damage.

Diamond characteristics:

- **Formation:** *Diamonds form in the Earth's mantle and are brought to the surface through volcanic activity.*
- **They are found in volcanic landforms like dykes and sills.**
- **Uses:** Diamonds are utilised in jewellery, industrial cutting tools, and polishing due to their hardness.

Diamonds in India:

Major locations:

- **Panna belt:** Madhya Pradesh
- **Wajrakarur Kimberlite pipe:** Anantapur district, Andhra Pradesh
- **Krishna River basin gravels:** Andhra Pradesh
- **Recent discoveries:** *New kimberlite fields in Raichur-Gulbarga districts, Karnataka.*
- **Processing:** Modern cutting and polishing are concentrated in Surat, Navasari, Ahmedabad, and Palampur.

Global diamond production:

- **Leading producers:** Russia, Botswana, Canada, Australia, South Africa, and the Democratic Republic of Congo (DRC).

Notable producers:

- **Botswana:** Key mines include Orapa and Jwaneng.
- **Australia:** Known for coloured diamonds such as pink, purple, and red.
- **South Africa:** Hosts diverse diamond deposits including kimberlite and fissure mining.
- **Synthetic diamonds:** *The US is the largest producer of synthetic industrial diamonds.*

Global diamond resources:

- **Russia:** Believed to have the largest and richest diamond resources.
- **Botswana:** Leading in value and significant in volume.
- **DRC:** One of Africa's major diamond producers.

41. Lunar Magma Ocean

Context:

The Pragyan rover claims that the moon's surface was composed of magma when it was first formed 4.5 billion years ago and lends credence to the Lunar Magma Ocean hypothesis.

About Lunar Magma Ocean:

- **The hypothesis describes a period early in the Moon's history when its outer layer was predominantly molten.**
- This idea suggests that, soon after the Moon's formation, its surface was covered by a global ocean of molten rock, which played a crucial role in shaping the Moon's current structure and composition.
- **Formation: Resulted from the heat generated by a Mars-sized body colliding with early Earth, leading to the Moon's creation.**
- **Crystallization:** As the LMO cooled, minerals crystallized, forming the Moon's layered structure:
- **Mantle:** Formed by denser minerals sinking.
- **Crust:** Formed by lighter minerals floating, leading to the creation of the lunar highlands.
- **Significance:** LMO explains the Moon's geological structure and early evolution, including volcanic activity and the formation of basins.
- **Evidence:** Supported by lunar rock samples from Apollo missions and remote sensing data showing a differentiated interior.

42. Security of Supply Arrangement**Context:**

India and the US have signed two significant agreements as the Indian Defence Minister started his official visit to the US.

Security of Supply Arrangement (SOSA):

- **It is a non-binding pact signed between India and the US to ensure reciprocal priority support for goods and services that promote national defence.**
- India is the 18th country to enter SOSA with the US.
- **Other SOSA partners include Australia, Canada, Denmark, Estonia, Finland, Israel, Italy, Japan, Latvia, Lithuania, the Netherlands, Norway, the Republic of Korea, Singapore, Spain, Sweden, and the UK.**

- **Aim** - Strengthen the defence industrial ecosystem of both countries by enhancing supply chain resilience.
- **Features** - U.S. and India commit to support one another's priority delivery requests for procurement of critical national defence resources.
- US provides India with priority support for critical national defence resources through the Defence Priorities and Allocations System (DPAS) mechanism.
- Indian companies to prioritize support for US defence requirements under a government-industry Code of Conduct.
- India will draw up a list of domestic companies that will volunteer to undertake a government-industry Code of Conduct to provide military equipment to the US on priority.
- **Benefit** – SOSA is a significant step toward greater defence industry collaboration, with potential for future legally binding agreements like the Reciprocal Defence Procurement Agreement (RDP).
- It will be a key factor in strengthening the Defence Technology and Trade Initiative (DTTI) between the two countries.
- SOSA will make it easier for Indian companies to get priority supplies from the US and revitalise the defence industry cooperation between the two countries.

Memorandum of Agreement on Liaison Officers:

- Facilitates the assignment of Indian Liaison Officers to key US strategic commands.
- Enhances information sharing and cooperation between the Indian and US armed forces.

Strategic Commands and Regional Security:

- The deployment of Indian officers in US strategic commands is expected to enhance regional security and international cooperation.

- The agreements contribute to the broader Indo-US collaboration on industrial, defence, and security issues.

43. Rhumi-1

Context:

Rhumi-1 recently takes off in Thiruvudanthai in Chennai's East Coast Road.

About:

- **Rhumi-1 is India's first reusable hybrid rocket on a mobile Launchpad with the goal of advancing research on global warming and climate change.**
- It is an initiative of Space Zone India, Tamil Nadu-based start-up in partnership with Martin Group.
- **Altitudes** - Ranging from 1 km to 500 km.
- **Weight** - 80 kilograms and 3.5 metres tall.
- It is powered by a hybrid motor using a generic fuel and features an electrically triggered parachute deployer.
- **Fuel** - Rhumi-1 rocket combines the advantages of both liquid oxidiser and solid fuel propellant systems.
- **RHUMI 1** is equipped with adjustable launch angle that can be set anywhere between 0 and 120 degrees, enabling precise trajectory adjustments.
- **Payloads** - Rhumi-1 carried 3 cube satellites designed to monitor and gather data on atmospheric conditions, such as cosmic radiation intensity, UV radiation, and air quality.
- The rocket also deployed 50 different Pico satellites, each dedicated to studying various atmospheric factors, including accelerometer readings, altitude, and ozone levels.

44. Vigyan Dhara

Context:

The Union Cabinet recently approved continuation of the three umbrella schemes, merged into a unified central sector scheme namely 'Vigyan Dhara' of Department of Science and Technology (DST).

About Vigyan Dhara:

Vigyan Dhara is a unified central sector scheme under the Department of Science and Technology (DST), Ministry of Science and Technology.

The scheme has three broad components:

1. Science and Technology (S&T) Institutional and Human Capacity Building,
2. Research and Development and
3. Innovation, Technology Development and Deployment.

Objectives of the Vigyan Dhara Scheme:

- Promoting Research and Innovation.
- Support basic and translational research in critical areas.
- **Increase the participation of women in Science, Technology, and Innovation (STI) and work towards achieving gender parity.**
- Align programs with DST's 5-year goals for realizing the vision of Viksit Bharat 2047.

45. Toxic heavy metals in rivers

Context:

As many as 81 rivers and tributaries of the country have extremely high concentration of one or more trace and toxic heavy metals, the study by the Central Water Commission (CWC) indicated.

About:

Some of the Notable Impacts and Disease Associated with the Heavy Metals are:

Mercury: High levels of mercury can have negative consequences such as nerve, brain and kidney damage, lung discomfort, eye irritation, skin rashes, vomiting and diarrhoea.

- **Minamata disease** is a chronic neurological disorder caused by methylmercury, a heavy metal with many industrial uses.

46. Sonoluminescence

About Sonoluminescence:

- Sonoluminescence is a fascinating phenomenon where small gas bubbles in a liquid emit a brief flash of light when exposed to intense sound waves.
- This phenomenon was first observed in 1934 by two German engineers studying sonar, a method of using sound waves for navigation similar to how bats operate.

How does sonoluminescence work?

Sound wave interaction: The process begins when a tiny bubble trapped in a liquid is subjected to powerful sound waves.

- These waves cause the bubble to rapidly expand and contract due to alternating high and low-pressure phases.

Extreme conditions: During the contraction phase, the bubble compresses so rapidly that its internal temperature skyrockets to several thousand kelvins.

- This extreme heat ionizes the gases inside the bubble, resulting in the emission of light energy for a fraction of a second—about a trillionth of a second.

Natural occurrence:

- **Pistol Shrimp:** Sonoluminescence isn't confined to laboratory settings. In nature, the pistol shrimp (family Alpheidae) exhibits a similar effect.
- This shrimp has a specialized claw that snaps shut with remarkable speed, creating a high-velocity jet of water.
- This jet forms a low-pressure bubble that, upon collapsing, produces a loud sound, intense heat, and a brief flash of light.

Applications:

- **Scientific curiosity:** Sonoluminescence continues to captivate scientists due to its mysterious nature and potential applications.
- While the phenomenon is primarily of academic interest, it has sparked discussions about its **potential use in fields like thermonuclear fusion and acoustic imaging.**

47. Polaris Dawn Mission

Context:

The Polaris Dawn mission aims to revolutionise commercial spaceflight with a high-orbit mission and the first-ever private spacewalk by non-professional astronauts.

About Polaris Dawn Mission:

- Polaris Dawn is set to be the first non-governmental mission to conduct a spacewalk, reaching an unprecedented altitude of approximately 700 kilometres (435 miles) above Earth.
- This altitude surpasses that of the International Space Station (ISS), which orbits at about 400 kilometres.
- **Spacecraft:** SpaceX will provide the Falcon 9 rocket and Dragon capsule for the mission. The spacecraft will attempt to break the altitude record set by NASA's Gemini 11 mission in 1966, which reached 1,373 kilometres.
- **Crew and leadership:** The mission is spearheaded by billionaire entrepreneur Jared Isaacman, who previously financed and flew on SpaceX's Inspiration4 mission, the first civilian mission to orbit Earth.

Understanding the Van Allen Belts:

Composition: The Van Allen Belts consist of charged particles trapped by Earth's magnetosphere, which protects the planet from solar storms and cosmic rays.

- These belts were first identified in 1958 by the American physicist James Van Allen.

Location: The belts are divided into two types:

- **Inner belt:** Located between 680 and 3,000 kilometres above the Earth's surface, this belt is primarily composed of high-energy protons. It forms due to the interaction between cosmic rays and Earth's atmosphere.
- **Outer belt:** Situated at altitudes ranging from 15,000 to 20,000 kilometers above the Earth's surface, the outer belt predominantly consists of high-energy electrons originating from the solar wind.

Radiation risks: The spacewalk during Polaris Dawn will expose the crew to higher levels of radiation than those on the ISS.

- The charged particles within these belts can lead to radiation sickness, harm to human tissues, and an increased risk of cancer.

Data collected during this mission will be crucial for future deep-space missions, including NASAs planned 2025 mission to the Moon and Mars.

Significance of the Spacewalk:

- **Van Allen belts:** The mission will involve orbiting through the Van Allen Belts, regions of intense radiation that astronauts typically avoid. The ability to navigate these belts is crucial for future missions to Mars.
- **Testing new spacesuits:** The four astronauts on board will test new spacesuits developed by SpaceX. These suits are designed to protect against the heightened radiation found in the Van Allen Belts.

48. Fixed Dose Combination Drugs

Context:

The government has banned 156 fixed-dose combination (FDC) drugs, including popular medicines such as Cheston Cold and Foracet, used for cold and fever and pain respectively.

About

- A total of 499 FDCs have been banned since 2014. The problem of irrational FDCs was first highlighted in 2012.
- A committee set up in 2014 found 963 such drugs to be irrational and suggested their ban. The government's recent action is part of an ongoing effort to eliminate these from the market
- The 2019 rules require FDCs to be treated as new drugs, needing central approval, which has reduced the number of irrational combinations in the market.
- The Indian Pharmaceutical Alliance (IPA) supports the ban, citing previous committee reviews and emphasizing patient safety

About Fixed Dose Combination (FDC):

- **Fixed Dose Combination (FDC) refers to a pharmaceutical product that contains two or more active ingredients combined in a fixed ratio in a single dosage to improve compliance.**
- **Usage: FDCs are commonly used in the treatment of infectious diseases, cardiovascular disorders, diabetes, HIV, malaria and asthma. Eg Nimesulide, Paracetamol dispersible tablets etc.**

Reason for the Ban:

No Therapeutic Benefits: These FDCs were termed "irrational" by the government, meaning they offer no therapeutic benefit or contain ingredients that don't work well together or aren't necessary for patients to take together.

- Patients might end up consuming unnecessary drugs. For example, Cheston Cold combines paracetamol, cetirizine, and phenylephrine, which may not all be needed for every patient.

Impact on the Market: Manufacturers have been ordered to stop producing, stocking, and selling these drugs immediately, though they may still be available for some time due to potential legal challenges

Health Impact: Consuming these banned FDCs now is unlikely to cause harm, but their continued use poses risks like antibiotic resistance and unnecessary medication.

Despite earlier bans, FDCs have increased in proportion, particularly antibiotic FDCs, with many being potentially inappropriate and not recommended by WHO.

49. Indian Railways to adopt nuclear energy

Context:

The Indian Railways plans to adopt nuclear energy as part of its green initiative to achieve net-zero carbon emissions by 2030.

About Initiative:

- Indian Railways is actively exploring using nuclear power through captive units as part of its strategy to increase reliance on non-fossil fuel sources.
- The first nuclear-powered train movements are expected to focus on circuits served by the Nabinagar Thermal Power Plant, leveraging existing infrastructure to test and expand nuclear energy use in rail transport.

What are Nuclear-Powered Trains?

- Nuclear-powered trains utilise the heat generated from a nuclear reaction to produce steam, which drives turbines.
- One turbine power the train, while another creates electricity for auxiliary systems such as lighting and air conditioning.
- The idea of nuclear-powered trains gained attention in the 1950s, especially in the USSR, where it became a goal of the Ministry of Transport.

How do Nuclear-Powered Trains function?

Design: These trains would feature a portable nuclear reactor. The reactor heats a fluid to produce steam, which then powers electric turbines. These turbines generate the necessary electricity to propel the train.

Thorium reactors: Thorium-based reactors are considered for their lower radiation risks compared to other nuclear materials.

- The design of the reactors incorporates advanced safety mechanisms to minimise risks and prevent potential misuse.

50. Small Modular Reactors**Context:**

In the Budget 2024-25, 'Bharat Small Reactors' (BSR) has been emphasized to achieve clean energy and energy security.

Small Modular Reactors:

Small Modular Reactors – They are a class of small nuclear fission reactors, designed to be built in a factory, shipped to operational sites for installation and then used to power buildings or other commercial operations.

- Small – Physically a fraction of the size of a conventional nuclear power reactor.
- Modular – Making it possible for systems and components to be factory-assembled and transported as a unit to a location for installation.
- Reactors – Harnessing nuclear fission to generate heat to produce energy.
- **Types - Reactor type and the nuclear processes may vary based on SMR designs. Of them pressurized water reactor (PWR) is the most common.**

Capacity – They have a power capacity of up to 300 MW(e) per unit.

- It is about one-third of the generating capacity of traditional nuclear power reactors and can produce large amount of low-carbon electricity.

Refuelling - Power plants based on SMRs may require less frequent refuelling, every 3 to 7 years, in comparison to between 1 and 2 years for conventional plants.

- Some SMRs are designed to operate for up to 30 years without refuelling.

Benefits – Many of the benefits of SMRs are inherently linked to the nature of their design, small and modular.

- **Locational Accommodation** - SMRs can be sited on locations not suitable for larger nuclear power plants.
- **Affordability** - Prefabricated units of SMRs can be manufactured and then shipped and installed on site, making them more affordable to build.
- **Easy Construction** - SMRs offer savings in cost and construction time, and they can be deployed incrementally to match increasing energy demand.

SMR in India - There are 15 pressurised heavy water reactors (PHWR) of 220 MW each being operated in India, accounts for half of India's 6780 MW nuclear power capacity.

PHWR to BSR - Government is considering modifying the PHWRs pressurised heavy water reactors into BSRs.

51. Quasar

Context:

Using the European Southern Observatory's (ESO) Very Large Telescope (VLT), astronomers recently identified a quasar described as the "brightest of its kind" and the "most luminous object ever observed."

About Quasar:

- A quasar is an extremely active and luminous type of active galactic nucleus (AGN).
- An AGN is nothing more than a supermassive black hole that is active and feeding at the centre of a galaxy.
- All quasars are AGNs, but not all AGNs are quasars.
- Quasar is short for quasi-stellar radio source, because astronomers first discovered quasars in 1963 as objects that looked like stars but emitted radio waves.
- Quasars are intense sources of X-rays as well as visible light. They are the most powerful type of X-ray source yet discovered.
- They are among the most luminous, powerful, and vibrant objects known in the universe.

How are they formed?

- Quasars are thought to form in regions of the universe where the large-scale density of matter is much higher than average.
- An active galaxy is one in which the central supermassive black hole is consuming large amounts of matter.
- The in fall of matter into the black hole is so great that all the material can't enter the black hole at the same time, so it forms a queue as a spiralling accretion disk.
- The matter—in the form of huge clouds—falls into the disk, with the inner parts of the cloud closer to the black hole orbiting faster than the outer parts (just like planets closer to the sun orbit faster than those farther away).

- This creates a shear force that twists the clouds, causing them to bump into their neighbours as they move around the black hole at velocities ranging from 10% of the speed of light up to over 80%.
- This friction from fast-moving gas clouds generates heat, and the disk becomes so hot—millions of degrees—that it shines brightly.
- Some of the material in the disk is also funnelled away from the black hole in a highly luminous, magnetically collimated jet.
- The hot accretion disk and the jet combine to make the nucleus of the active galaxy shine so brightly that it can be seen far across the universe.
- The brightest quasars can outshine all of the stars in the galaxies in which they reside, which makes them visible even at distances of billions of light-years.

Most quasars have been found billions of light-years away.

52. Piezoelectric Polymer

Context:

Researchers from Centre for Nano and Soft Matter Sciences (CeNS), an autonomous institute of Department of Science and Technology, in collaboration with scientists from National Chemical Laboratory (CSIR-NCL), Pune have developed a security alert system based on piezoelectric polymer nanocomposite.

About Piezoelectric Polymer:

- These are polymers that can generate electric charges on the surface under pressure/strain thus convert mechanical energy into electrical energy.

Characteristics:

- These polymers have much higher piezoelectric stress constants indicating that they are much better sensors than ceramics.

- They have low dielectric constant, low elastic stiffness, and low density, which result in a high voltage sensitivity and low acoustic and mechanical impedance (crucial for medical and underwater applications).
- Piezoelectric polymeric sensors and actuators offer the advantage of processing flexibility because they are lightweight, tough, readily manufactured into large areas, and can be cut and formed into complex shapes.
- Polymers also typically possess a high dielectric breakdown and high operating field strength, which means that they can withstand much higher driving fields than ceramics.

53. Solar paraboloids

Context:

Solar paraboloid technology, a form of concentrating solar power (CSP), is emerging as a promising renewable energy solution.

About Solar paraboloids:

Solar paraboloids operate using a Parabolic Trough Collector (PTC) system.

- These systems consist of long, parabolic mirrors that focus sunlight onto a receiver tube placed at the focal line of the mirror.

Parabolic Mirrors: These mirrors are shaped like a parabola and are designed to focus sunlight onto a receiver tube located at the focal line of the mirror.

Receiver Tube: This tube captures the concentrated sunlight and heats a fluid contained within it.

- The heated fluid can be used to generate electricity through a steam turbine or provide direct heat for industrial processes.

This design offers several advantages over traditional PV panels

- One of the key benefits of solar paraboloid technology is its ability to operate at higher temperatures, up to 300°C, which significantly increases thermal efficiency.

- As per the manufacturing standards, 25 °C or 77 °F temperature indicates the peak of the optimum temperature range of photovoltaic solar panels.

The increase in operating temperature and amount of heat collected per unit area demands a smaller absorbing surface area.

- This results in a significant decrease in convective and conductive heat losses, in turn increasing thermal efficiency.

Economic implications and market potential: Solar paraboloids are highly efficient in concentrating solar energy, which means that more electricity can be generated from the same amount of sunlight.

This efficiency could lead to lower costs per unit of electricity produced, making solar energy more competitive with traditional fossil fuels.

54. Cyclone Asna

Context:

Cyclone Asna recently moved past Gujarat without making any serious impact on the prone regions, said officials.

About Cyclone:

Tropical cyclones generally do not cross the equator due to the Coriolis effect, which is responsible for the rotation of cyclones.

- The Coriolis effect is weakest at the equator and increases as you move towards the poles.
- This weak effect near the equator makes it difficult for cyclones to cross from one hemisphere to the other.

In the southern hemisphere, cyclones rotate clockwise.

- The Coriolis effect causes cyclones to rotate counterclockwise in the northern hemisphere and clockwise in the southern hemisphere.

The eye of a cyclone is the calmest part.

- It is characterised by relatively clear skies and light winds, while the most intense and destructive winds occur in the eyewall surrounding the eye.



R.C.REDDY
IAS STUDY CIRCLE

45+ Years Director's Experience | 35+ Years Institute's History

Current Affairs Test Series for CSE Prelims 2025 (offline/online)

Offline Test Locations : Himayat Nagar or Ashok Nagar Branch

13 Tests
(100 Qs Each), Total 1300 Qs
with Detailed Explanation PDFs

Covering Static Topics Based
on 13 months of CA :
(April 2024 to April 2025)

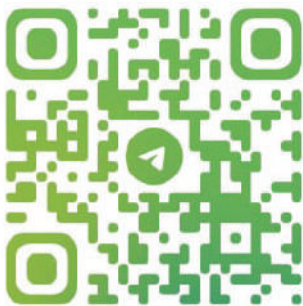
★ **Analysis by Faculty**
after each test

High - Quality MCQs

Covers Latest MCQ Patterns
based on PYQs

**CURRENT AFFAIRS TEST SERIES SCHEDULE
PLAN - 2024-25**

S.No.	Test Name	Date of Test
1	CA April 2024	18-08-2024
2	CA May 2024	01-09-2024
3	CA June 2024	15-09-2024
4	CA July 2024	29-09-2024
5	CA August 2024	13-10-2024
6	CA September 2024	27-10-2024
7	CA October 2024	17-11-2024
8	CA November 2024	15-12-2024
9	CA December 2024	12-01-2025
10	CA January 2025	16-02-2025
11	CA February 2025	16-03-2025
12	CA March 2025	13-04-2025
13	CA April 2025-20 Days	04-05-2025



Scan to Join our Telegram
Channel for more updates



Early bird discount
till 25th August
(4,720/- incl GST)



Scan for Schedule, Application
and Payment Form

WHATSAPP YOUR QUERIES TO



70756 52127

INTERNATIONAL RELATIONS

1. India has been elected as Vice-Chair of the Supply Chain Council

Context:

India has been elected as Vice-Chair of the Supply Chain Council.

About

- India and 13 other Indo-Pacific Economic Framework for Prosperity (IPEF) partners have established three bodies under the IPEF's agreement on supply chain resilience. The pact came into force in 2024.
- They are Supply Chain Council [SCC], Crisis Response Network [CRN], and Labor Rights Advisory Board [LRAB] for cooperation among partner countries for strengthening supply chain resilience in the region.
- The Supply Chain council was set up to pursue targeted, action-oriented work to strengthen the supply chains for those sectors and goods most critical to national security, public health, and economic well-being.

Indo-Pacific Economic Framework for Prosperity (IPEF)

- IPEF was launched in 2022, in Tokyo. The members are Australia, Brunei, Fiji, India, Indonesia, Japan, Korea, Malaysia, New Zealand, Philippines, Singapore, Thailand, Vietnam and the U.S.
- The IPEF seeks to strengthen economic engagement and cooperation among partner countries with the goal of advancing growth, economic stability and prosperity in the region.
- The framework is structured around four pillars relating to Trade (Pillar I), Supply Chain Resilience (Pillar II), Clean Economy (Pillar III), and Fair Economy (Pillar IV).
- India has joined Pillars II to IV of IPEF while it has maintained an observer status in Pillar-I.

2. Ismail Haniyeh assassinated in an air strike in Tehran

Context:

Hamas leader Ismail Haniyeh recently assassinated in an air strike in Tehran, Iran.

Group Name	Associated country
1. Hezbollah	Lebanon
2. Houthi	Yemen
3. Popular Mobilization Forces	Iraq
4. M23	Democratic Republic of Congo

AXIS of resistance - It is a coalition of Iranian-backed anti-US and anti-Israel political and militant groups.

- **Origin of the Name** – Its name is inspired by former US President George W Bush's use of the term 'axis of evil'.
- It referred to Iran, Iraq, and North Korea.

Group Members:

- Hezbollah - Shiite militant organization, Lebanon.
- Hamas - Palestinian Sunni militant group in Gaza
- Palestinian Islamic Jihad (PIJ) - Sunni Islamist militant group, Palestine
- Houthis - Zaydi Shia militant group, Yemen.

Popular Mobilization Forces (PMF) (Iraq) - A coalition of mainly Shiite militias, formed to combat ISIS.

M23 (Democratic Republic of Congo) - A rebel group involved in conflicts in eastern Congo.

3. Refugee Rights

Context:

Refugee women, especially those with disabilities are guaranteed certain rights but are seldom able to realise them given the multitude of barriers they face.

Refugee Rights:

- The 1951 Refugee Convention and its 1967 Protocol are the key legal documents that form the basis of UNHCR's work.
- They define the term 'refugee' and outline their rights and the international standards of treatment for their protection.
- The 1951 Refugee Convention and its 1967 Protocol form the cornerstone of international refugee protection.

Rights contained in the 1951 Convention include:

- The right not to be expelled, except under certain, strictly defined conditions (Article 32)
- The right not to be punished for irregular entry into the territory of a contracting State (Article 31)
- The right to non-discrimination (Articles 3 and 5)
- The right to decent work (Articles 17 to 19 and 24)
- The right to housing, land and property, including intellectual property (Articles 13, 14 and 21)
- The right to education (Article 22)
- The right to freedom of religion (Article 4).
- The right to access to justice (Article 16)
- The right to freedom of movement within the territory (Article 26 and Article 31 (2))
- The right to be issued civil, identity and travel documents (Articles 12, 27 and 28)
- The right to social protection (Articles 23 and 24 (2-4)).

The cornerstone of the 1951 Convention is the principle of non-refoulement contained in Article 33. According to this principle, a refugee should not be returned to a country where they face serious threats to their life or freedom.

4. Court of Arbitration for Sport

Context:

Vinesh Phogat's appeal against Olympic disqualification rejected by Court of Arbitration for Sport.

About:

- The Court of Arbitration for Sport (CAS; French: Tribunal arbitral du sport, TAS) is an international body established in 1984 to settle disputes related to sport through arbitration.
- With the intermixing of sports and politics, the body was originally conceived by International Olympic Committee (IOC) president Juan Antonio Samaranch to deal with disputes arising during the Olympics. It was established as part of the IOC in 1984.
- Generally speaking, a dispute may be submitted to the CAS only if an arbitration agreement between the parties specifies recourse to the CAS. However, according to rule 61 of the Olympic Charter, all disputes in connection with the Olympic Games can only be submitted to CAS.
- Its headquarters are in Lausanne, Switzerland and its courts are located in New York City, Sydney, and Lausanne. Temporary courts are established in current Olympic host cities.

5. United Nations Security Council

Context:

The Deputy Permanent Representative of India to the U.N. said that the Council is ill-equipped to address the international challenges as there is a lack of representation.



@RCREDDYIAS

For other months issues and updates
Join our telegram channel

United Nations Security Council (UNSC)

- It is one of the UN's six main organs and is aimed at maintaining international peace and security.

Current Composition

- The UNSC currently consists of five permanent members (P5): China, France, Russia, the United Kingdom, and the United States.
- These P5 members hold veto power, allowing them to block any substantive resolution.
- Additionally, there are ten non-permanent members elected for two-year terms.
- More than 50 United Nations Member States have never been Members of the Security Council.

UNSC Elections

- Each year the General Assembly elects five non-permanent members (out of 10 in total) for a two-year term.

The 10 non-permanent seats are distributed on a regional basis as follows:

- Five for African and Asian States.
- One for the Eastern European States.
- Two for the Latin American and Caribbean States;
- Two for Western European and other States

G4 Nations:

- These, comprising Brazil, Germany, India, and Japan, are four countries that support each other's bids for permanent seats on the United Nations Security Council.
- Unlike the G7, where the common denominator is the economy and long-term political motives, the G4's primary aim is the permanent member seats on the Security Council.
- Each of these four countries have figured among the elected non-permanent members of the council since the UN's establishment.

6. Geneva Conventions

Context:

August 12 marked 75 years since the adoption of the Geneva Conventions in 1949.

About:

- Geneva Conventions are a set of four treaties which include more than 400 articles, setting out detailed rules for the treatment of prisoners, protecting hospitals and medical staff, allowing humanitarian aid and prohibiting torture, rape and sexual violence.
- It was formalised in 1949 by the United Nations.
- The Geneva Conventions are rules that apply only in times of armed conflict and seek to protect people who are not or are no longer taking part in hostilities.
- India ratified the Geneva Convention in 1950, becoming the 5th country in the World and the first country in the region to adopt and implement legislation for the 1949 Conventions.
- India also ratified Protocol III but is not a signatory to the Additional Protocols I and II.

7. Sabina Shoal

Context:

China's natural resource ministry recently released its first survey report of the South China Sea's disputed Sabina Shoal.

About Sabina Shoal:

- Sabina Shoal, also known as Xianbin Reef, is an oceanic coral atoll that developed on top of a seamount in the eastern part of the Spratly Islands in the South China Sea.
- It is located some 75 nautical miles from the Philippine province of Palawan.
- It is considered to be within the Philippines 200-nautical mile exclusive economic zone (EEZ) under the 1982 United Nations Convention on the Law of the Sea.

- China, however, claims the shoal and much of the South China Sea as its sovereign territory and has maintained a continuous presence there. It is located 630 nautical miles from China.
- Sabina Shoal extends close to 23 km along its northwest-southeast axis.
- It is composed of two main parts connected by a narrow section.
- The western part measures 13 km long by 6 km wide and is larger than the eastern part, which measures 10 km by 3 km.
- They both have a central lagoon surrounded by a coral ring made of discontinuous shallow sections.

8. Pacific Islands Forum

Context:

Recently, the annual meeting of the Pacific Islands Forum (PIF) began on August 26 in Nuku'alofa, the capital of Tonga.

About Pacific Islands Forum:

- It is an intergovernmental organisation formed in 1971.
- Member countries: It consists of 18 member states located in the Pacific region.
- Australia, Cook Islands, Federated States of Micronesia, Fiji, French Polynesia, Kiribati, Nauru, New Caledonia, New Zealand, Niue, Palau, Papua New Guinea, Republic of Marshall Islands, Samoa, Solomon Islands, Tonga, Tuvalu, and Vanuatu.

Aim:

- It aims to push for economic growth, enhance political governance and security for the region, and strengthen regional cooperation.
- Its vision is for a resilient Pacific region of peace, harmony, security, social inclusion and prosperity that ensures all Pacific peoples can lead free, healthy and productive lives.

The organisation discusses priority issues at its annual meeting, where decisions made by the member states are reached by consensus.

The decisions are implemented by the Pacific Islands Forum Secretariat.

PIF members have been pushing to raise funds for climate action. Notably, the Pacific Resilience Facility (PRF) — a regional financing facility established by PIF is currently \$380 million short of its \$500 million target.



@RCREDDYIAS

**For other months issues and updates
Join our telegram channel**

ART AND CULTURE

1. Grand Jhumur dance performance

Context:

The Assam government is gearing up for a grand Jhumur dance performance featuring 8,000 tea tribe artists.

Traditional Dances	Associated State
1. Jhumur	Assam
2. Panwariya	Bihar
3. Ponung	Arunachal Pradesh
4. Huttari	Karnataka

About Jhumur:

- It is a traditional dance of the tea tribe communities of Assam.
- The dance is usually performed during the Autumn season in Assam.
- This dance is also found in a few parts of West Bengal.
- This dance is performed by young girls mostly in an open area like a field or under a tree.
- The girls performed this dance, accompanied by male members to maintain the rhythm and vocals and play musical instruments.
- The dance is performed to the rhythmic accompaniment of the Madal, a popular two-headed hand drum.
- Further accompanying the drums are flute, and pair of Taals that make the music more harmonious.
- The girls mostly perform the dancing part, holding each other's waist and moving hands and legs forward and backward synchronously.
- This dance incorporates songs and dialogues, which depict the joys and sorrows, yearning and aspirations of the everyday lives of the common people.

- Sometimes this dance is performed as a ritual worship, sometimes for courting and lovemaking, and sometimes for prayer for rainfall by the tea tribe communities of Assam.
- It is believed that Jhumur was originally a means of recreation between phases of tedious agricultural work.

2. Göbekli Tepe

Context:

Archaeologists at Göbekli Tepe, an ancient site in Turkey, have possibly discovered the world's oldest calendar, dating back nearly 13,000 years.

About:

- Göbekli Tepe, often referred to as the world's first temple, features a series of large stone pillars adorned with ornate carvings.
- These carvings have long puzzled researchers, but recent studies suggest they represent an ancient timekeeping system.
- The carvings on the pillars include a series of V-shaped symbols, each representing a single day. By counting these symbols, researchers identified a calendar of 365 days, divided into 12 lunar months with an additional 11 days.
- This system aligns closely with the modern solar calendar, indicating a sophisticated understanding of astronomy by the ancient people who created it long before the development of written language.



@RCREDDYIAS

For other months issues and updates
Join our telegram channel

3. Sri Aurobindo

Context:

PM Modi paid homage to the revered philosopher, thinker, and spiritual leader Sri Aurobindo, on his 152nd birth anniversary.

Early Life:

- Primary education from England – St. Paul's School, London, and at King's College, Cambridge.
- He returned to India in 1893 and worked for the next thirteen years in the Princely State of Baroda and as a professor in Baroda College.

Role in freedom struggle:

- In 1906, Aurobindo was appointed the first principal of the National College in Calcutta (Bengal National College), and started to impart national education to Indian youth.
- He was the first political leader in India to openly put forward the idea of complete independence for the country in his newspaper Bande Mataram.
- In 1907 at the Surat session of Congress, he led along with extremists.
- He helped establish a series of youth clubs, including the Anushilan Samiti of Calcutta in 1902.
- He was arrested in 1908 in connection with the Alipore Bomb Case.

Yogic Life:

- Sri Aurobindo had begun the practice of Yoga in 1905 in Baroda.
- In 1910 he withdrew from politics and went to Pondicherry in order to devote himself entirely to his inner spiritual life and work.
- During his forty years in Pondicherry, he evolved a new method of spiritual practice, which he called the Integral Yoga.
- In 1926, he founded the Sri Aurobindo Ashram.

Literary works:

- **The Life Divine**, which deals with the philosophical aspect of Integral Yoga.
- **Synthesis of Yoga**, which deals with the principles and methods of Integral Yoga.
- **Savitri**: A Legend and a Symbol, an epic poem.

4. Oeko-Tex Certification

Context:

The North Eastern Handicrafts and Handlooms Development Corporation (NEHHDC) has recently received the Oeko-Tex Certification for its Eri Silk.

About:

- The Oeko-Tex certification is a rigorous standard that ensures textiles are tested for harmful substances and produced in environment friendly conditions.
- Oeko-Tex Certification is provided by the OEKO-TEX organisation.
- OEKO-TEX consists of independent textile and leather testing institutes located in Europe and Japan.
- The institutes work together to develop test methods and define limit values that form the basis of OEKO-TEX standards.
- The testing institutes carry out accredited testing processes.
- These institutes are active in research and development and are committed to innovation in the textile and leather industries.
- They conduct both laboratory tests and company audits in accordance with global OEKO-TEX guidelines.

The North Eastern Handicrafts and Handlooms Development Corporation (NEHHDC) has successfully obtained the prestigious Oeko-Tex certification for its Eri Silk.

- NEHHDC works under the aegis of the Ministry of Development of North Eastern Region (DoNER).

Significance of Oeko-Tex Certification:

- This achievement further cements the silk's status as a Geographical Indication (GI) product of Assam, highlighting its authenticity and regional importance.
- This certification marks a pivotal step in bringing Eri Silk closer to penetrating the global export market, expanding its reach, and establishing a strong international presence.

Eri silk – Is one of the most durable and strong fibres. It is cooling in the summer and warming in the winter.

- Eri Silk, celebrated as the world's only vegan silk, distinguishes itself through an ethical production process where the silk moth is allowed to naturally emerge from its cocoon, leaving the silk intact.
- This compassionate method sets Eri Silk apart from other silks, aligning with growing global demands for sustainable and eco-friendly textiles.
- It is mostly found in tribal areas of Assam.



@RCREDDYIAS

**For other months issues and updates
Join our telegram channel**



R.C.REDDY
IAS STUDY CIRCLE

45+ Years Director's Experience | 35+ Years Institute's History

Current Affairs Test Series for CSE Prelims 2025 (offline/online)

Offline Test Locations : Himayat Nagar or Ashok Nagar Branch

13 Tests
(100 Qs Each), Total 1300 Qs
with Detailed Explanation PDFs

Covering Static Topics Based
on 13 months of CA :
(April 2024 to April 2025)

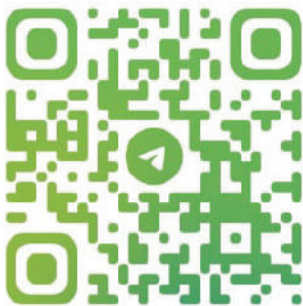
★ **Analysis by Faculty**
after each test

High - Quality MCQs

Covers Latest MCQ Patterns
based on PYQs

**CURRENT AFFAIRS TEST SERIES SCHEDULE
PLAN - 2024-25**

S.No.	Test Name	Date of Test
1	CA April 2024	18-08-2024
2	CA May 2024	01-09-2024
3	CA June 2024	15-09-2024
4	CA July 2024	29-09-2024
5	CA August 2024	13-10-2024
6	CA September 2024	27-10-2024
7	CA October 2024	17-11-2024
8	CA November 2024	15-12-2024
9	CA December 2024	12-01-2025
10	CA January 2025	16-02-2025
11	CA February 2025	16-03-2025
12	CA March 2025	13-04-2025
13	CA April 2025-20 Days	04-05-2025



Scan to Join our Telegram
Channel for more updates



Early bird discount
till 25th August
(4,720/- incl GST)



Scan for Schedule, Application
and Payment Form

WHATSAPP YOUR QUERIES TO



70756 52127

MISCELLANEOUS

1. Wayanad Landslide

Context:

Wayanad, which is grappling with the horror of the deadly July 30 landslide disaster, was among several places in Kerala that had featured high on a national-level database created by the Indian Space Research Organisation (ISRO) in 2023 based on exposure to landslides in terms of “key socio-economic parameters.”

Factors controlling the occurrence of landslides in the Western Ghats:

- **Topography:** The region's steep slopes and escarpments contribute to terrain instability, making it prone to landslides.
- **Geological Composition:** The type of rock and soil in the area, including weathered and fractured rocks, can influence the stability of the slopes.
- **Soil Cover:** The type and thickness of soil cover on slopes can significantly impact slope stability, with shallow soils being more prone to landslides.
- **Heavy Rainfall:** Intense monsoon rains can saturate the soil, reducing its stability and increasing the likelihood of landslides.
- **High Population Density:** Areas with high population density often experience increased pressure on land resources, leading to activities such as deforestation, construction, and agriculture on vulnerable slopes.
- **Deforestation and Land Use Changes:** Activities such as deforestation, agriculture, and construction can remove stabilising vegetation and alter natural drainage, increasing landslide risk.



@RCREDDYIAS

For other months issues and updates
Join our telegram channel

2. Lightning

Context:

In July, the Odisha government approved a proposal to plant 19 lakh palm trees to ward against the problem of deaths due to lightning strikes.

About

- A total of 3,790 people have lost their lives to lightning strikes in the last 11 years, due to the increased frequency of lightning strikes.
- **Lightning was declared a state-specific disaster in Odisha in 2015.**
- Odisha is an eastern coastal state situated in the tropical zone, with its hot, dry climate presenting the perfect blend of conditions for lightning strikes.

What is Lightning?

- Scientifically, lightning is a rapid and massive discharge of electricity in the atmosphere some of which is directed towards earth.
- It is a giant spark of electricity in the atmosphere between clouds, the air, or the ground.
- The thunderclouds possess millions of volts of electrical charge and different polarity within the cloud itself.
- In the early stages of development, air acts as an insulator between the positive and negative charges in the cloud and between the cloud and the ground.
- **When the opposite charge builds up enough, this insulating capacity of air breaks down and there is a rapid discharge of electricity known as lightning.**
- Lightning can occur between opposite charges within the thunderstorm cloud (intra-cloud lightning) or between opposite charges in the cloud and on the ground (cloud-to-ground lightning).

Atmospheric Conditions:

- The atmospheric conditions are quite conducive for formation of severe thunderstorms in the pre – monsoon season.
- There are sensitive weather pockets which enhance the ferocity of these storms.
- Bihar, Jharkhand and Odisha and the Indo-Gangetic plains of north India including Rajasthan and Uttar Pradesh are vulnerable to fatal lightning strikes.
- Hilly areas both in the north and northeast are prone to this calamity.

Trends:

- Long-term (1998–2014) Tropical Rainfall Measuring Mission (TRMM) satellite-based lightning observations depict the most frequent lightning occurrences along the Himalayan foothills, the Indo-Gangetic plains and coastal regions, while the intensity of these lightning strikes is found to be strongest along the coastal regions and in the Bay of Bengal.
- The highest number of cloud-to-lightning (CG) strikes occur in eastern and central India according to the Annual Lightning Report 2023-2024.

Factors Responsible for Increased Incidents of Lightning in India:

Geographic and Climatic Conditions: Regions with high humidity, such as the eastern states and coastal areas, are more prone to thunderstorms and lightning.

- The topography, including the Himalayas and the Western Ghats, also influences the frequency of lightning.

Monsoon Dynamics: The monsoon season, with its intense rainfall and convective activity, is a major driver of lightning in India.

- The convergence of moist air masses and the rising of warm, moist air during the monsoon season often leads to the formation of thunderstorms and lightning.

Urbanization and Industrialization: Rapid urbanization and industrialization increase the number of artificial heat sources and aerosols in the atmosphere.

- These enhance convection and contribute to more frequent thunderstorms, thus increasing lightning incidents.

Climate Change: Changes in global climate patterns are influencing local weather phenomena.

- Increased temperatures and changes in humidity levels alter storm dynamics, potentially leading to more frequent and intense lightning events.

Agricultural Practices: The burning of agricultural residues and deforestation can contribute to the accumulation of particulates in the atmosphere.

- These particulates affect cloud formation and increase the likelihood of thunderstorms and lightning.

3. Bagata Tribe**Context:**

Bagata tribal people who worked for Lower Sileru Hydro-Electric Project construction continue to reel under darkness even as they fight on the back foot, for electricity.

About Bagata Tribe:

- The Bagatas cite the historic origin of their community's name as the devoted warriors (Bhaktas) of the then rulers.
- They are also called Bagatha, Bagat, Bagodi, Bogad or Bhakta.
- **Location: They live in the state of Odisha and also in the state of Andhra Pradesh.**

About Thadou people:

- **The Thadou are an indigenous people who live in the hill country adjacent to the Imphal Valley in the northeastern Indian state of Manipur.**
- They are also found in Assam, Nagaland, and Mizoram in India, and in Chin State and Sagaing Division in Burma/Myanmar.

- The Thadou language belongs to the Tibeto-Burman family of the Sino-Tibetan languages.

Mahar and Matang are the most prominent SC communities in Maharashtra.

- Mahar are socio-culturally proactive and mostly embrace Buddhism.
- Matang are the second largest SC community and are mostly Hindu.

Meghwal is the largest SC community in Rajasthan, spread across the state but are mainly found in border districts of Bikaner, Jaisalmer, Barmer, Jodhpur.

- **Transplantation of Human Organs and Tissues Rules (THOT), 2014: It has many provisions to remove the impediments to organ donation while curbing misuse/misinterpretation of the rules.**

4. National Disasters

Context:

Recently, Kerala has requested the Centre to declare Wayanad landslide a 'National Disaster' underscores the urgency of addressing natural calamities and their impact on vulnerable populations.

About the National Disasters:

- There is no official or defined category of 'national disasters', however, these are significant events that can cause widespread damage, loss of life, and disruption to communities.
- In India, the management of such disasters is overseen by the National Disaster Management Authority (NDMA), a government body responsible for disaster preparedness, mitigation, response, and recovery.

Role of State and Centre:

One of NDMA's annual reports highlights 'the state government is primarily responsible for undertaking rescue, relief and rehabilitation measures in the event of a disaster'. But these can be supplemented with Central Assistance.

In the event of a calamity of a severe nature, where the requirement of funds for relief operations is beyond the funds available in the State's Disaster Response Fund (SDRF) account, additional Central assistance is provided from the National Disaster Response Fund, after following the laid down procedure.

The Disaster Management Division of the Ministry of Home Affairs will provide support and monitor the utilisation of funds.

- **A Calamity Relief Fund (CRF) is set up, with the corpus shared 3:1 between Centre and State.**
- **When resources in the CRF are inadequate, additional assistance is considered from the National Calamity Contingency Fund (NCCF), funded 100% by the Centre.**

The annual Central contribution is released in two equal instalments as per the recommendation of the Finance Commission.

5. VIRAASAT

Context:

VIRAASAT", a fortnight long exhibition dedicated to celebrating 10th National Handloom Day began at Handloom Haat in Janpath recently.

About VIRAASAT:

- **It is organized by the National Handloom Development Corporation Ltd (NHDC) under the Ministry of Textiles.**
- **The series "VIRAASAT"- the "Exclusive Handloom Expo" is a continuation of celebrations held during previous years around the National Handloom Day.**
- Focus: The event focuses on the glorious tradition of Handloom and Handicrafts. It also provides a market connected to the handloom weavers and artisans.
- The unique products such as Banarasi, Jamdani, Baluchari, Madhubani, Kosa, Ikkat, Patola, Tussar Silk, Maheshwari, Moirang Phee, Baluchari, Phulkari, Laheriya, Khandua and Tangaliya will be featured in this exhibition.

Key facts about the National Handloom Day

- **Historical context:** The Swadeshi Movement which was launched on 7th August, 1905 had encouraged indigenous industries and in particular handloom weavers.

- Since 2015, the Government of India has decided to commemorate the 7th of August every year as the National Handloom Day.
- The first National Handloom Day was held on 7th August 2015 in Chennai.
- It aims to recognise the efforts and skills of the community of weavers engaged in this sector.

6. National Calamity

Context:

The Kerala government has requested the Centre to declare the landslide in the Wayanad district as a national disaster.

Provisions to Classify a National Calamity:

- There is no provision, executive or legal, to declare a natural calamity as a national calamity.
- The existing guidelines of the State Disaster Response Fund (SDRF)/ National Disaster Response Fund (NDRF), do not contemplate declaring a disaster as a 'National Calamity.'
- The 10th Finance Commission (1995-2000) examined a proposal that a disaster is termed "a national calamity of rarest severity" if it affects one-third of the population of a state.

The panel did not define a "calamity of rare severity" but stated that a calamity of rare severity would necessarily have to be adjudged on a case-to-case basis taking into account:

- the intensity and magnitude of the calamity
- level of assistance needed
- the capacity of the state to tackle the problem
- the alternatives and flexibility were available within the plans to provide succour and relief, etc.

7. Seahorses:

Context:

The Directorate of Revenue Intelligence (DRI) busted an international smuggling racket engaged in the illegal trade of dried seahorses at the Kempegowda International Airport in Bengaluru.

About Seahorses:

- Seahorses are part of the pipefish family.
- They have chromatophores in their skin cells that allow them to change colour and blend into their surroundings, making them hard to spot.

Unique Reproduction: Male seahorses and sea dragons are the ones that get pregnant.

- After an elaborate courtship, the female deposits eggs into the male's brood pouch for fertilization.
- The male gives birth to a few dozen to up to 1,000 baby seahorses, which must survive on their own.
- Only about 0.5% survive to adulthood.

Ecological role: Seahorses have a strong, long-term relationship with their habitats.

- They feed on bottom-dwelling organisms and small shrimp.
- They are preyed upon by invertebrates, fish, sea turtles, seabirds, and marine mammals.

Threats: Many of the 47 known seahorse species are in decline, partly due to habitat loss, pollution, fisheries, and traditional medicine.

- They have also been affected by capture for the aquarium trade, although captive-bred seahorses are proving to be more resilient in tanks than wild ones.

8. Ginning

Context:

The ministry of textiles has empowered cotton ginners across the country to produce Kasturi Cotton Bharat brand, based on the QR code certification technology, as per stipulated protocol.

What is Ginning?

- It is one of the most important steps of the spinning process.

- After collecting seed cotton from the farm or field, cotton moves to nearby Gins for separation of seed, lint, and any other foreign particles.
- Ginning is the process to get the cleaned cotton by separating or removing the seeds, dust, or any other foreign particles, so that better cotton can be offered for the cotton spinning mills.
- It was traditionally done by hand, but nowadays, machines are used.

About Kasturi Cotton Bharat:

- It is an initiative of the Ministry of Textiles, Textile Trade Bodies, and Industry with the objective of creating premium value for cotton grown in India as per benchmarked specifications.
- It is a pioneering effort in traceability, certification, and branding of Indian cotton.
- It was formalised through the signing of a memorandum of understanding (MoU) between the Cotton Corporation of India and the Cotton Textiles Export Promotion Council on 15 December 2022.
- To provide complete traceability of Kasturi Cotton Bharat-tagged bales across the supply chain, QR-based certification technology is being used at each stage of the processing, and a Block-chain based software platform will provide end-to-end traceability and transaction certificates.
- In this regard, Microsite with QR code verification and Block Chain technology has been developed.
- The Kasturi Cotton Bharat programme is operational at the national level, and its promotion is being made at national and international platform. Hence, the allocation of funds is not at state level.
- Ginners across the country have been empowered to produce Kasturi Cotton Bharat brand as per stipulated protocol.

9. Landslide Early Warning Systems

Context:

India launched its first regional early warning system for rain-induced landslides.

About Landslide Early Warning Systems (LEWS):

- It is developed by the Geological Survey of India (GSI), and is designed to predict the likelihood of landslides based on rainfall data.
- The National Landslide Forecasting Centre started by the GSI.
- Current Coverage: Daily forecasts are provided for Kalimpong, Darjeeling, and the Nilgiris.
- It will Extend coverage to other areas by 2030.

Function:

- **Prediction:** Assess likelihood of landslides.
- **Dissemination:** Share information to mitigate impacts.
- **Response:** Enable timely action based on forecasts.

Types:

- **Regional Systems:** Forecasts over larger areas but cannot pinpoint specific slopes.
- **Slope-Specific Systems:** More detailed, targeting individual slopes.

International Comparisons:

- **Hong Kong:** Effective communication through door-to-door campaigns.
- **Other Countries:** Italy, the US, and Japan have developed advanced systems for debris flows.



@RCREDDYIAS

For other months issues and updates
Join our telegram channel

10. Indian Military Exercises

Context:

Recently, the Indian Air Force and Royal Malaysian Air Force participated in Exercise Udara Shakti 2024.

Indian Military Exercise	Participating Country
1. Exercise Udara Shakti	Malaysia
2. Exercise Mitra Shakti	Sri Lanka
3. Exercise Yudh Abhyas	United States
4. Exercise Garuda Shakti	Indonesia

About Exercise Udara Shakti:

- The joint air exercise was conducted in collaboration with the Royal Malaysian Air Force (RMAF) at Kuantan, Malaysia.
- It was aimed at bolstering operational efficiency, technical experts of both Air Forces engaged in exchange of their maintenance practices.
- During the exercise, IAF's Su-30MKI fighter jets engaged in air combat missions alongside the RMAF's Su-30MKM fighters, enabling the crew of both air forces to familiarize with each other's operational protocols, thereby enhancing interoperability, commonality and overall effectiveness in Su-30 aircraft operations.

Key facts about Su-30MKI:

- The Sukhoi Su-30MKI is a multirole combat fighter aircraft.
- It is jointly developed by the Sukhoi Design Bureau and Hindustan Aeronautics Limited (HAL) for the Indian Air Force (IAF).
- Based on the Su-30 fighter aircraft, Su-30MKI is equipped with thrust vectoring control and canards.

11. Gallantry Awards

Context:

President Droupadi Murmu approved 103 gallantry awards to armed forces and Central Armed Police Forces (CAPF) personnel on the eve of the 78th Independence Day.

About:

- Gallantry Awards have been instituted by the Government of India to honour the acts of bravery and sacrifice of the officers/personnel of the Armed Forces, other lawfully constituted Forces and civilians.
- Post-independence, the first three gallantry awards namely Param Vir Chakra, Maha Vir Chakra and Vir Chakra were instituted by the Government of India on 26th January 1950 and were deemed to have effect from the 15th August 1947.
- After that, other three gallantry awards i.e. Ashoka Chakra Class-I, Ashoka Chakra Class-II and Ashoka Chakra Class-III were instituted by the Government of India on 4th January, 1952, which were deemed to have effect from the 15th August, 1947.
- These awards were renamed as Ashoka Chakra, Kirti Chakra and Shaurya Chakra respectively in January, 1967.

These gallantry awards are announced twice in a year, first on the occasion of the Republic Day and then on the occasion of the Independence Day.

Gallantry awards are categorized into two types:

1. Wartime Gallantry Awards

- These awards are given for bravery in the face of the enemy.

2. Peacetime Gallantry Awards

- These awards are given for bravery other than in the face of the enemy.

Order of precedence of these awards is the Param Vir Chakra, the Ashoka Chakra, the Mahavir Chakra, the Kirti Chakra, the Vir Chakra and the Shaurya Chakra.

12. Right to Disconnect of Australia

Context:

Recently, Australia has implemented a regulation known as the "right to disconnect," which permits employees to disregard communications from their employers after hours.

About the Right to Disconnect of Australia

- **It allows employees to ignore communications from their employers after regular working hours.**
- The primary goal of this policy is to alleviate the stress associated with being constantly available and responsive outside of work hours.
- It recognises that employees need dedicated downtime to recharge and maintain a healthy work-life balance.
- The Australian government joins more than 20 other countries in adopting similar rules, mostly in Europe and Latin America.

Global Precedents:

- **France: Pioneered the 'right to disconnect' in 2017, allowing employees to ignore work-related emails outside working hours.**
- Portugal, Belgium, and Ireland: Followed suit, emphasising the need for balance.

13. New India Literacy Programme**Context:**

In a letter to all States, the Ministry of Education (MoE) has defined 'literacy,' and what it means to achieve 'full literacy,' in the light of the renewed push for adult literacy under the New India Literacy Programme (NILP).

About New India Literacy Programme (NILP):

- **ULLAS – Nav Bharat Saaksharta Karyakram, also known as the New India Literacy Programme (NILP), is a centrally sponsored initiative that aligns with the National Education Policy (NEP) 2020.**
- It aims to empower adults aged 15 and above from all backgrounds who missed formal schooling, helping them integrate into society and contribute to the nation's growth.

Objectives:

- **To cover non-literates of the age group of 15 years and above in all States/UTs.**
- The target for Foundational Literacy and Numeracy for FYs 2022-27 is 5 (five) crore learners, with 1 crore learners per year by using "Online Teaching, Learning and Assessment System (OTLAS)".

Literacy defined:

- **Literacy may be understood as the ability to read, write, and compute with comprehension, i.e. to identify, understand, interpret and create along with critical life skills such as digital literacy, financial literacy etc.**
- Full literacy (to be considered equivalent to 100% literacy) will be achieving 95% literacy in a State/UT that may be considered as equivalent to fully literate.

The ULLAS scheme is being implemented solely in the spirit of Volunteerism or 'Kartavyabodh', catalysing the program into Janbhagidari that is a citizen's movement.

14. Project NAMAN**Context:**

Indian Army launched the first phase of Project NAMAN

About Project NAMAN:

- **Project NAMAN is designed to provide dedicated support and services to Defence Pensioners, Veterans, and their families.**
- It centres around the SPARSH (System for Pension Administration Raksha) digital pension system, aiming to streamline pension processes.
- **Partnership and Implementation:** The project involves a tripartite MoU between the Indian Army's Directorate of Indian Army Veterans, Common Service Centre (CSC) e-Governance India Limited, and HDFC Bank Limited.
- **Phase One Expansion:** 14 CSCs established in key locations: New Delhi, Jalandhar, Leh, Dehradun, Lucknow, Jodhpur, Bengdubi, Gorakhpur, Jhansi, Secunderabad, Saugor, Guntur, Ahmedabad, and Bangalore.
- Plan to expand to approximately 200 centres nationwide in the next 2-3 years.
- **Impact and Benefits:** Project NAMAN enhances welfare for veterans and their families, provides commonly required e-Governance services, and creates entrepreneurial opportunities for Veterans and Next of Kin (NOK), empowering them to contribute to their communities.



R.C.REDDY
IAS STUDY CIRCLE

45+ Years Director's Experience | 35+ Years Institute's History

Current Affairs Test Series for CSE Prelims 2025 (offline/online)

Offline Test Locations : Himayat Nagar or Ashok Nagar Branch

13 Tests
(100 Qs Each), Total 1300 Qs
with Detailed Explanation PDFs

Covering Static Topics Based
on 13 months of CA :
(April 2024 to April 2025)

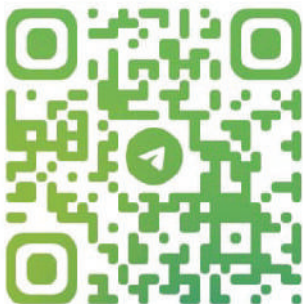
★ **Analysis by Faculty**
after each test

High - Quality MCQs

Covers Latest MCQ Patterns
based on PYQs

**CURRENT AFFAIRS TEST SERIES SCHEDULE
PLAN - 2024-25**

S.No.	Test Name	Date of Test
1	CA April 2024	18-08-2024
2	CA May 2024	01-09-2024
3	CA June 2024	15-09-2024
4	CA July 2024	29-09-2024
5	CA August 2024	13-10-2024
6	CA September 2024	27-10-2024
7	CA October 2024	17-11-2024
8	CA November 2024	15-12-2024
9	CA December 2024	12-01-2025
10	CA January 2025	16-02-2025
11	CA February 2025	16-03-2025
12	CA March 2025	13-04-2025
13	CA April 2025-20 Days	04-05-2025



Scan to Join our Telegram
Channel for more updates



Early bird discount
till 25th August
(4,720/- incl GST)



Scan for Schedule, Application
and Payment Form

WHATSAPP YOUR QUERIES TO



70756 52127



R.C. REDDY
IAS STUDY CIRCLE

45+ Years Director's Experience | 35+ Years Institute's History

Current Affairs Test Series for CSE Prelims 2025 (offline/online)

Offline Test Locations : Himayat Nagar or Ashok Nagar Branch

13 Tests
(100 Qs Each), Total 1300 Qs
with Detailed Explanation PDFs

Covering Static Topics Based
on 13 months of CA :
(April 2024 to April 2025)

★ Analysis by Faculty
after each test

High - Quality MCQs

Covers Latest MCQ Patterns
based on PYQs

Start Date:

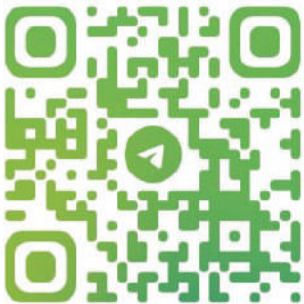
**11th August
2024**

Access free CA magazine
from our Telegram channel

Enrol in our Current Affairs
Test Series

Test Explanation
Class & Answer Key

Excel at Current Affairs



Scan to Join our Telegram
Channel for more updates



Early bird discount
till 25th August
(4,720/- incl GST)



Scan for Schedule, Application
and Payment Form

WHATSAPP YOUR QUERIES TO



70756 52127