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PRELIMS



POLITY & GOVERNANCE



Project 39A

Project 39A

- It is a **criminal reforms advocacy group** with the National Law University, Delhi.
- It is inspired by **Article 39-A of the Indian Constitution**, a provision that furthers the intertwined values of equal justice and equal opportunity by removing economic and social barriers
- Project 39A aims to **trigger new conversations on legal aid, torture, forensics, mental health in prisons**, and the death penalty, using empirical research to re-examine practices and policies in the criminal justice system
- The dismal state and sometimes the **absence of record-keeping in the police, prisons and courts** along with multiple barriers to accessing records/ data complicates criminal justice research in India.

The New Integrated Food security Scheme

In News: The Centre will provide foodgrains to states under the National Food Security Act (NFSA) free for one year from January 1st 2023.

About the scheme:

- It is to begin on 1 January 2023 for a period of **1 year**.
- It would provide **free food grains** to 81.35 crore beneficiaries under NFSA including Antyodaya Ann Yojana households and Priority Household persons.
- The new integrated scheme will **subsume** two current food subsidy schemes of the Department of Food and Public Distribution- **a) Food Subsidy to FCI for NFSA, and b) Food Subsidy for decentralized procurement states**, dealing with procurement, allocation and delivery of free foodgrains to the states under NFSA.
- Free foodgrains will concurrently ensure uniform implementation of portability under **One Nation One Ration Card (ONORC)** across the country and will further strengthen this choice-based platform.
- Central Government will bear the food subsidy of more than Rs. 2 Lakh crore for the year 2023.



Passport as a fundamental right under article 21

Context: The Jammu & Kashmir and Ladakh High Court slammed the Passport Office, Srinagar, for not considering the application of the mother of PDP chief.

Earlier interpretation of article 21 and Judicial pronouncements:

- The Supreme Court of India significantly broadened the interpretation of Article 21 of the Indian Constitution in **Maneka Gandhi v. Union of India**, a historic judgement.

	<ul style="list-style-type: none"> ○ It overruled K. Gopalan v. State of Madras, which had implied the exclusiveness of fundamental rights, and established a relationship between Articles 14, 19, and 21 of the Constitution (known as the 'golden triangle' or 'trinity'). • It held that a law depriving a person of 'personal liberty' must not violate any of them. • The decision also held that a procedure under Article 21 of the Constitution cannot be arbitrary, unfair, oppressive, or unreasonable. • Recently the Delhi High Court also observed that every citizen has a fundamental right to go abroad and have a passport issued in his name. • In Poulami Basu vs The Government of India: <ul style="list-style-type: none"> ○ A Single Bench of Karnataka HC has held that, right to travel abroad is a fundamental right guaranteed under Article 21 of the Constitution of India.
Article 19 of the Indian Constitution	<p>Context: By ruling that a citizen can seek enforcement of the fundamental rights to freedom of speech not just against the state, the Supreme Court has, effectively, extended the ground for seeking these rights against other citizens.</p> <p>About Article 19:</p> <p>Article 19(1) of the Constitution of India guarantees six fundamental freedoms to every citizen of India, namely:</p> <ul style="list-style-type: none"> • Freedom of speech and expression; • Freedom to assemble peacefully and without arms; • Freedom to form associations, unions or co-operative societies; • Freedom to move freely throughout the territory of India; • Freedom to reside and settle in any part of the territory of India, and • Freedom to practice any profession, or to carry on any occupation, trade or business. <p>Importance of Article 19</p> <ul style="list-style-type: none"> • This freedom is essential because the censorial power lies in the people over and against the Government and not in the Government over and against the people. • The freedom of speech and expression is required to fulfil the following objectives : To discover truth, Non self-fulfilment, Democratic value and To ensure pluralism. <p>Reasonable Restrictions under Article 19: The State can impose restrictions on the freedom of speech and expression in the interests of</p> <ul style="list-style-type: none"> • Sovereignty And Integrity Of India, • The Security Of The State, • Friendly Relations With Foreign States, • Public Order, Decency Or Morality, Or • In Relation To Contempt Of Court, • Defamation, Or • Incitement To An Offence. <p>Key details of the Supreme Court ruling:</p>

- The court took this view while ruling that the **right of free speech and expression guaranteed under the Article 19(1)(a)** cannot be curbed by any additional grounds other than those already laid down in Article 19(2).
- Article 19 which guarantees **freedom of speech and expression is a right invoked against the state.**
- The court, **extending free speech against private citizens**, opens up a range of possibilities in Constitutional law.
- This interpretation could also bring an obligation on the state to ensure private entities also abide by Constitutional norms.
- **K S Puttaswamy case:** The Court relied on the 2017 verdict in Puttaswamy where a nine-judge bench unanimously upheld **privacy as a fundamental right.**
 - One of the key arguments by the government was that **privacy is a right enforceable against other citizens** and, therefore, cannot be elevated to the status of a fundamental right against the state.
- Under Indian Constitution, all the Fundamental Rights are available against the State but **only 4 fundamental Rights are available against both State and individuals.**
 - **Article 15(2)** – no citizen shall be subjected to any form of discrimination based on caste, religion, place of birth, or caste.
 - **Article 17** – abolition of Untouchability.
 - **Article 23** – Prohibits trafficking of humans and forced labour.
 - **Article 24** – Prohibits employment of children in factories and hazardous place.

Aspirational Block Programme


In News: Prime Minister Narendra Modi launched the government's Aspirational Block Programme (ABP), The ABP was launched during the 2nd National Conference of **Chief Secretaries.**

Aspirational Block Programme (ABP):

- The Aspirational Blocks Programme is **on the lines of the Aspirational District Programme.**
- It was announced in the **Union Budget 2022-23.**
- The programme will cover **500 districts** across 31 states and Union Territories initially.
- Over half of these blocks are in **6 states**—Uttar Pradesh, Bihar, Madhya Pradesh, Jharkhand, Odisha and West Bengal.

Aspirational District Programme (ADP):

- Launched in **2018**
- It **aims** to quickly and effectively transform **112 most under-developed districts** across the country.
- The program is anchored by **NITI Aayog** at the Government of India level.
- The broad contours of the programme are **Convergence** (of Central & State Schemes), **Collaboration** (of Central, State level Nodal Officers & District Collectors), and **Competition** among districts through monthly delta ranking; all driven by a mass movement.

	<ul style="list-style-type: none"> With States as the main drivers, this program focuses on the strength of each district, identifying low-hanging fruits for immediate improvement and measuring progress by ranking districts on a monthly basis. The ranking is based on the incremental progress made across 49 Key Performance Indicators (KPIs) under 5 broad socio-economic themes – Health & Nutrition, Education, Agriculture & Water Resources, Financial Inclusion & Skill Development and Infrastructure. Champions of Change Dashboard is used for rankings.
Delegated Legislation	<p>Context: Recently, the majority ruling of the Supreme Court upheld the validity of the delegated legislation in the Centre's 2016 decision on demonetisation.</p> <p>About Delegated Legislation:</p> <ul style="list-style-type: none"> Parliament routinely delegates certain functions to authorities established by law since every aspect cannot be dealt with directly by the lawmakers themselves. <ul style="list-style-type: none"> This delegation of powers is noted in statutes, which are commonly referred to as delegated legislation. The delegated legislation would specify operational details, giving power to those executing the details. Regulations and by-laws under the legislation are classic examples of delegated legislation. In 1973, the Supreme Court ruling explains the concept as: <ul style="list-style-type: none"> "The practice of empowering the Executive to make subordinate legislation within a prescribed sphere has evolved out of practical necessity and pragmatic needs of a modern welfare State". <p>Supreme Court's opinion on Delegation of powers:</p> <ul style="list-style-type: none"> The majority verdict held that since the delegation of power is to the Centre which is anyway answerable to the Parliament, the delegation power cannot be struck down. In case the Executive does not act reasonably while exercising its power of delegated legislation, it is responsible to Parliament who are elected representatives of the citizens for whom there exists a democratic method of bringing to book the elected representatives who act unreasonably in such matters. A 1959 landmark ruling in Hamdard Davakhana v Union of India, the Supreme Court had struck down the delegation of powers on the grounds that it was vague. 
Monument Mitra Project	<p>Context: The Monument Mitra scheme, which entails adopting a heritage site and maintaining it, will soon be revamped to enable private firms, to partner for the upkeep of 1,000 ASI monuments.</p> <p>About Monument Mitra Project:</p> <ul style="list-style-type: none"> It aims at ensuring quality and inclusive provision of amenities and facilities across heritage, natural, and tourist sites through active participation of private and public sector organizations and individuals.

	<ul style="list-style-type: none"> ○ These organizations would be known as “Monument Mitras” for their collaboration initiative. • This project is envisioned to fulfill the objective of the Government of India to provide an enhanced tourism experience to all travelers. • The project plans to entrust development, upgradation and maintenance of amenities and facilities at the heritage, natural and tourist sites to the Monument Mitras, coupled with innovation and technology interventions to increase awareness of these incredible treasures. • The project began with 93 ASI monuments and has extended to heritage, natural and tourist sites across India. • This revised scheme will be led by the culture ministry. • The previous scheme was led by the tourism ministry. • The monuments are separated into three categories depending on tourist footfall and visibility: • Green: <ul style="list-style-type: none"> ○ Iconic sites like the Taj Mahal, Qutub Minar, and Red Fort, among others, are categorized as ‘Green’. • Blue: <ul style="list-style-type: none"> ○ while Purana Quila and Jantar Mantar fall in the ‘Blue’ category. • Orange: <ul style="list-style-type: none"> ○ The Sanchi Stupa is one popular site in the ‘Orange’ category. • Entities are encouraged to adopt from the Blue and Orange category, or a mix of the three. • Adoption of only ‘Green’ category monuments is not allowed.
Human Rights Watch report	<p>Context: Recently, The World Report 2023 of Human Rights Watch (HRW) said that Indian authorities had intensified and broadened their crackdown on activist groups and the media through 2022.</p> <p>About Human Rights Watch:</p> <ul style="list-style-type: none"> • Human Rights Watch (HRW) is an international non-governmental organization headquartered in New York City. • It conducts research and advocacy on human rights. • The group pressures governments, policymakers, companies, and individual human rights abusers to denounce abuse and respect human rights. • It often works on behalf of refugees, children, migrants, and political prisoners. • In 1997, Human Rights Watch shared the Nobel Peace Prize as a founding member of the International Campaign to Ban Landmines.
World Hindi Day 2023	<p>Context: On 10th January every year, World Hindi Day is celebrated to mark the anniversary of first time Hindi was spoken in the United Nations General Assembly (UNGA).</p> <p>About Hindi Language:</p> <ul style="list-style-type: none"> • The word Hindi came from a Persian word ‘Hind’, which means the land of the Indus River.

- Spoken Hindi has 4 varieties: **High Hindi, Nagari Hindi, Literary Hindi, and standard Hindi.**
- The earliest form of Hindi was called '**Apabhramsa**', which was an offspring of Sanskrit.
- In 400 AD, **poet Kalidas wrote Vikramorvashiyam in Apabhramsa.**
- It is the third most spoken language in the world after **English and Mandarin (Chinese).**
- It belongs to **Indo-Aryan language, widely spoken in Northern part of India.**
- Mauritius, Fiji, Guyana, Suriname, Trinidad and Tobago and Nepal also have Hindi speaking population.
- Hindi written in **Devanagari script is to be the official language of the Union.**
- The other official language of the state is **English since 1965.**

World Hindi Day (Vishwa Hindi Diwas):

- The purpose is to create awareness about the **Indian language and promote it as a global language around the world.**
- **Indian Ministry of External Affairs** celebrates this day every year since 2006.
- **World Hindi Conference** is observed **every three years** to spread awareness about the leading scholars and contributors to the language.
- **First World Hindi Conference was organised in 1975.**
- On this day, President of India presents the **Rajbhasha awards** to people for their **contribution towards Hindi language.**
- **Hindi Diwas** is celebrated on **September 14 annually.**
 - It marks the **birthday of Beohar Rajendra Sinha**, who is also regarded as the main person behind making **Hindi the official language of India.**



Open Market Sale Scheme

Context: Recently the Government of India has approved a proposal for the sale of 30 Lakh Metric Tonnes of wheat under the Open Market Sale Scheme.

About the Open Market Scheme:

- It refers to **selling of foodgrains by Government / Government agencies at predetermined prices in the open market from time to time.**
- It aims to enhance the **supply of grains especially during the lean season and thereby to moderate the general open market prices** especially in the deficit regions.
- In addition to maintaining buffer stocks and making a provision for meeting the requirement of the **Targeted Public Distribution Scheme and Other Welfare Schemes (OWS), Food Corporation of India (FCI)** on the instructions from the Government, sells wheat and rice in the open market from time to time.
- For transparency in operations, the FCI has switched over to e- auction for sale under **Open Market Sale Scheme (Domestic).**

- The FCI conducts a weekly auction to conduct this scheme in the open market using the platform of commodity exchange **NCDEX (National Commodity and Derivatives Exchange Limited)**.
- The State Governments/ Union Territory Administrations are also allowed to participate in the e-auction, if they require wheat and rice outside TPDS and OWS.

The present form of OMSS comprises 3 schemes as under:

- Sale of wheat to bulk consumers/private traders through e-auction.
- Sale of wheat to bulk consumers/private traders through e-auction by dedicated movement.
- Sale of Raw Rice Grade 'A' to bulk consumers/private traders through e-auction.

About Food Corporation of India:

- Food Corporation of India (FCI) is a **Public Sector Undertaking**, under the **Department of Food and Public Distribution, Ministry of Consumer Affairs, Food and Public Distribution**.
- Headquarters at **New Delhi**.
- FCI is a **statutory body** set up in 1965 under the **Food Corporations Act 1964**.
- It was established against the backdrop of major shortage of grains, especially wheat.
- Simultaneously, **Commission for Agricultural Costs and Prices (CACP)** was created in 1965 to recommend remunerative prices to farmers.
- It has primary duty to undertake purchase, store, move/transport, distribute and sell food grains and other foodstuffs.

SC on Passive Euthanasia

Context: The Supreme Court has relaxed the guidelines for 'advance medical directive' that it issued in its 2018 judgment by which it had legalised passive euthanasia under certain circumstances. There is a long legal history to the matter.

about Euthanasia:

- **Greek words:** The term Euthanasia comes from two Ancient Greek words: 'Eu' means 'Good', and 'thantos' means 'death', so Euthanasia means good death.
- Euthanasia can be also divided into two types according to means of death.
- **Active Euthanasia:** It is also known as 'Positive Euthanasia' or 'Aggressive Euthanasia'.
 - It refers to causing intentional death of a human being by direct intervention.
 - For example, **by giving lethal doses of a drug or by giving a lethal injection**.
 - Active euthanasia is usually a quicker means of causing death and all forms of active euthanasia are illegal.
- **Passive Euthanasia:** It is also known as 'Negative Euthanasia' or 'Non-Aggressive Euthanasia'.
 - It is intentionally causing death by not providing essential, necessary and ordinary care or food and water.
 - It implies discontinuing, withdrawing or removing artificial life support systems.
 - Passive euthanasia is usually slower and more uncomfortable than active.

- Most forms of voluntary, passive and some instances of non-voluntary, passive euthanasia are legal.

New guidelines:

	NOW	EARLIER
Living will	An attestation by a notary or a Gazetted officer to be sufficient for a living will	It was necessary that a judicial magistrate attest or countersign a living will
Access to the living will	Living will a part of national health record which can be accessed by Indian hospitals	Living will was kept in the custody of the district court concerned
Primary board to examine patient's condition	Three doctors, including treating physician and two other doctors with five years of experience in the specialty, will comprise the primary board of doctors	Primary board of doctors needs at least four experts from general medicine, cardiology, neurology, nephrology, psychiatry or oncology with overall standing of at least 20 years
Time taken to decide	Primary/secondary board to decide within 48 hours on withdrawal of further treatment	The 2018 judgment did not specify any outer limit on withdrawal of treatment
Secondary board	Hospital must immediately constitute a secondary board of medical experts	The district collector had to constitute the second board of medical experts

Competition Commission of India

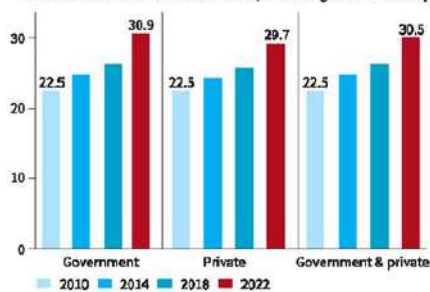

Context: Google has said that the order passed by India's competition regulator — **the Competition Commission of India (CCI)** — against Android's operating system policies will result in devices getting expensive in India and lead to proliferation of unchecked apps that will pose threats for individual and national security.

About Competition Commission of India:

- The Competition Commission of India has been established to enforce the competition law under the **Competition Act, 2002**.
- It comes under the **Ministry of Corporate Affairs**.
- It should be noted that on the recommendations of **Raghavan committee**, the **Monopolies and Restrictive Trade Practices Act, 1969 (MRTP Act)** was repealed and replaced by the Competition Act, 2002.
- The Commission consists of a **Chairperson and not more than 6 Members appointed by the Central Government**.
- It is the **statutory duty of the Commission** to eliminate practices having an adverse effect on competition, promote and sustain competition, protect the interests of consumers and ensure freedom of trade carried on by other participants, in markets in India as provided in the Preamble as well as **Section 18 of the Act**.
- The Commission is also mandated to give its opinion on competition issues to government or statutory authority and to undertake competition advocacy for creating awareness of competition law.
- **Advocacy is at the core of effective competition regulation**.
- Competition Commission of India (CCI), which has been entrusted with implementation of law, has always believed in complementing robust enforcement with facilitative advocacy.
- It is a **quasi-judicial body**.
- CCI also approves combination under the act so that **two merging entities do not overtake the market**.

The Competition Act

- **The Competition Act, 2002**, as amended by **the Competition (Amendment) Act, 2007**, follows the philosophy of modern competition laws.

	<ul style="list-style-type: none">The Act prohibits anti-competitive agreements, abuse of dominant position by enterprises and regulates combinations (acquisition, acquiring of control and M&A), which causes or likely to cause an appreciable adverse effect on competition within India.																				
National Commission for Protection of Child Rights	<p>In News: National Commission for Protection of Child Rights is celebrating its 18th Foundation Day.</p> <ul style="list-style-type: none">A Quiz was launched by the Commission on the occasion of National Youth Day (Swami Vivekananda Jayanti) to create awareness among children about child rights. <p>National Commission for Protection of Child Rights</p> <ul style="list-style-type: none">The Commission is a statutory body constituted under Section 3 of the Commission for Protection of Child Rights (CPCR) Act, 2005It aims to protect the child rights and other related matters in the country.The Commission is further mandated to monitor the proper and effective implementation of Protection of Children from Sexual Offences (POCSO) Act, 2012; Juvenile Justice (Care and Protection of Children) Act, 2015 and Right to Free and Compulsory Education (RTE) Act, 2009.In one of the functions laid down under Section 13 of the CPCR Act, 2005, the Commission has been assigned with the function to examine and review the safeguards provided by or under any law for the time being in force for the protection of child rights and recommend measures for their effective implementation.The Commission also has the powers of Civil Court trying a suit under Section 14 of CPCR Act, 2005 and Code of Civil Procedure, 1908.It works under the aegis of Ministry of Women and Child Development.																				
Annual Status of Education Report (ASER)	<p>Context: ASER, a nationwide citizen-led household survey that provides a snapshot of children’s schooling and learning in rural India has been released.</p> <p>About ASER:</p> <ul style="list-style-type: none">The report is prepared by Pratham Education Foundation.The 2022 edition of the survey was done at a national level after 4 years due to the COVID-19 pandemic.This is an annual survey that aims to provide reliable annual estimates of children’s schooling status and basic learning levels for each state and rural district in India.ASER has been conducted every year since 2005 in almost all rural districts of India.ASER is the largest citizen-led survey in India.It is also the only annual source of information on children’s learning outcomes available in India today. <div><p>Tuition trends Across India, the proportion of students from classes I to VIII taking paid private tuitions increased from 26.4% in 2018 to 30.5% in 2022, according to the latest report from ASER</p><table><thead><tr><th>Category</th><th>2010</th><th>2014</th><th>2018</th><th>2022</th></tr></thead><tbody><tr><td>Government</td><td>22.5</td><td>22.5</td><td>22.5</td><td>22.5</td></tr><tr><td>Private</td><td>22.5</td><td>22.5</td><td>22.5</td><td>22.5</td></tr><tr><td>Government & private</td><td>22.5</td><td>22.5</td><td>22.5</td><td>22.5</td></tr></tbody></table></div>	Category	2010	2014	2018	2022	Government	22.5	22.5	22.5	22.5	Private	22.5	22.5	22.5	22.5	Government & private	22.5	22.5	22.5	22.5
Category	2010	2014	2018	2022																	
Government	22.5	22.5	22.5	22.5																	
Private	22.5	22.5	22.5	22.5																	
Government & private	22.5	22.5	22.5	22.5																	

- Unlike most other large-scale learning assessments, **ASER is a household-based rather than school-based survey.**
- This design enables all children to be included – those who have never been to school or have dropped out, as well as those who are in government schools, private schools, religious schools or anywhere else.

Major highlights of the Information collected:

- Information on schooling status is collected for **all children in the age group 3-16.**
- Children in the **age group 5-16** are tested in basic reading and basic arithmetic.
- Basic information is collected on **school infrastructure, enrollment, attendance, teachers and fund flows.**
- Since 2010, ASER has tracked selected **Right to Education (RTE) indicators as well.**

Key Highlights of the Report:

Enrollment:

- Enrollment in government schools have increased significantly since 2018.
 - In 2018, the number stood at 65.6 per cent.
- The period 2006 to 2014 saw a **steady decrease in the proportion of children (aged 6 to 14) enrolled in government school.**
- The **proportion of children (age 6 to 14) enrolled** in government school increased sharply from 65.6% in 2018 to 72.9% in 2022.
- Overall, in the **age group of 6-14 years**, the enrollment rate now stands at 98.4%, an **increase from 97.2% in 2018.**

Enrolment of girls

- The number of girls in the **age group 11-14 years** who do not go to schools has also **decreased – 2% in 2022 compared to 4 % in 2018.**
- This figure is **around 4% only in Uttar Pradesh and is lower in all other states.**
- The decrease in the proportion of girls not enrolled in school is even sharper among **older girls in the 15-16 age group.**
 - In 2018, this figure stood at 13.5%.
- The **proportion of 15-16-year-old girls not enrolled** has continued to drop, standing at 7.9% in 2022.
- In only three states, the number of girls not going to school is above 10% – **Madhya Pradesh (17%), Uttar Pradesh (15%), and Chhattisgarh (11.2%).**

Private tuition:

- The number of students taking **private tuition classes has increased.**
- As per the ASER 2022 report, **the percentage of Class 1-8 students taking tuition classes is at 30.5% in 2022, compared to 26.4% in 2018.**

School facilities:

- The fraction of schools with **useable girls' toilets increased from 66.4% in 2018 to 68.4% in 2022.**
- The proportion of schools with **drinking water available increased from 74.8% to 76%,** and the proportion of schools with books other than **textbooks being used by students increased from 36.9% to 44% over the same period.**
- Most sports-related indicators also remain close to the levels observed in 2018.

<p>Chargesheet is not a "Public Document": Supreme Court</p>	<ul style="list-style-type: none"> In 2022, 68.9% of schools have a playground, up slightly from 66.5% in 2018. <p>Context: The Supreme Court bench recently declared chargesheets to be private documents. It said that the state is not obliged to provide the public free access to chargesheets by uploading them on police or government websites.</p> <p>About Chargesheet:</p> <ul style="list-style-type: none"> A charge sheet refers to a formal police record showing the names of each person brought into custody, the nature of the accusations, and the identity of the accusers. The charge sheet is to be filed within 60 days from the date of arrest of the accused in cases triable by lower courts and 90 days in cases triable by the Court of Sessions. No case for grant of bail will be made under section 167(2) of the CrPC if the charge sheet is filed before the expiry of 90 days or 60 days, as the case may be, from the date of first remand. The right of default bail is lost, once the charge sheet is filed. A charge sheet is distinct from the First Information Report (FIR), which is the core document that describes a crime that has been committed. Once the charge sheet has been submitted to a court of law, prosecution proceedings against the accused begin in the judicial system. <p>About FIR:</p> <ul style="list-style-type: none"> First Information Report (FIR) is a written document prepared by the police when they receive information about the commission of a cognizable offence. It is a report of information that reaches the police first in point of time and that is why it is called the First Information Report. Based on the information provided, I.R. can be registered by the Judicial Magistrate by giving direction to the concerned jurisdictional area of the Police Station. Zero F.I.R.: With the help of zero F.I.R., a complaint can be lodged at any police station irrespective of the jurisdiction of the Police Station. <ul style="list-style-type: none"> It is an amendment that came after Nirbhaya Rape Case.
<p>Advance Authorization Scheme (AAS)</p>	<p>Context: Recently, the Directorate General of Foreign Trade (DGFT) simplified the process of Levying Composition fees in case of extension of the Export Obligation Period under the Advance Authorisation Scheme (AAS).</p> <p>About Advance Authorization Scheme:</p> <ul style="list-style-type: none"> It allows duty free import of inputs, which are physically incorporated in an export product. In addition to any inputs, packaging material, fuel, oil, catalyst which is consumed / utilized in the process of production of export product, is also be allowed. The quantity of inputs allowed for a given product is based on specific norms defined for that export product, which considers the wastage generated in the manufacturing process. DGFT provides a sector-wise list of Standard Input-Output Norms (SION) under which the exporters may choose to apply.

- Alternatively, exporters may apply for their own ad-hoc norms in cases where the SION does not suit the exporter.
- **Advance Authorisation covers manufacturer exporters or merchant exporters tied to supporting manufacturer(s).**

About Directorate General of Foreign Trade:

- Directorate General of Foreign Trade (DGFT) Organization is an **attached office of the Ministry of Commerce and Industry** and is **headed by Director General of Foreign Trade**.
- **Headquarters at New Delhi.**
- It is responsible for **implementing the Foreign Trade Policy** with the main objective of promoting India's exports.

Additional Information:

About Directorate General of Trade Remedies (DGTR):

- The DGTR (earlier known as **Directorate General of Anti-Dumping & Allied Duties**) is an attached **office of the Department of Commerce, Ministry of Commerce & Industry**.
- The DGAD which was formed in 1997 has been restructured as DGTR in May 2018 by restructuring and re-designing DGAD into DGTR by incorporating all the trade remedial functions i.e. **Anti-Dumping Duty (ADD), Countervailing Duty (CVD), Safeguards Duty (SGD), Safeguards Measures (QRs)** under a single window framework.
- The DGTR is a **quasi-judicial body that independently undertakes investigations** before making its recommendations to the Central Government.
- It is the **single national authority for administering all trade remedial measures including anti-dumping, countervailing duties and safeguard measures**.
- It also provides **trade defence support to our domestic industry and exporters** in dealing with instances of trade remedy investigations instituted against them by other countries.



ECONOMY



The T+1 Settlement Cycle

Context: After China, India will become the second country in the world to start the 'trade-plus-one' (T+1) settlement cycle in top listed securities bringing operational efficiency.

About the T+1 Settlement Cycle:

- The T+1 settlement cycle means that trade-related settlements must be done within a day, or 24 hours, of the completion of a transaction.
- Until 2001, stock markets had a weekly settlement system.
- The markets then moved to a rolling settlement system of T+3, and then to T+2 in 2003.
- The United States, United Kingdom and Eurozone markets are yet to move to the T+1 system.
- Faster fund remittances, share delivery, and ease for stock market participants

Significance of T+1 plan:

- In the T+1 format, if an investor sells a share, he/she will get the money within a day, and the buyer will get the shares in **his/her Demat account also within a day.**
- This will also help investors in reducing the overall capital requirements with the **margins getting released on T+1 day**, and in getting the funds in the bank account within 24 hours of the sale of shares.
- The shift will boost **operational efficiency** as the rolling of funds and stocks will be faster.

Co-location Scam

Context: The Securities and Exchange Board of India (SEBI) will challenge the order of the **Securities Appellate Tribunal (SAT)**, against the National Stock Exchange (NSE) by the market regulator in the co-location scam.

Meaning of Co-location:

- Co-location is a **data centre facility** where **third parties can lease space for servers and other computer hardware.**
- They provide infrastructure like **power supply, bandwidth and cooling for setting up servers and storage of data.**
- Customers usually rent out space by rack, cabinet, cage or room.



Small savings schemes

In News: Government has increased interest rate on various small savings schemes for the fourth quarter of the current Financial Year starting from 1st January, 2023.

About Small Saving Schemes/Instruments

- Small Savings Schemes are a set of savings instruments managed by the central government with an aim to encourage citizens to save regularly irrespective of their age.
- They are popular as they not only provide **returns that are generally higher than bank fixed deposits** but also come with a **sovereign guarantee** and tax benefits.
- They are the major source of household savings in India and comprises 12 instruments.

	<ul style="list-style-type: none"> The depositors get an assured interest on their money. Collections from all small savings instruments are credited to the National Small Savings Fund (NSSF). The rates on these small savings schemes are calculated on the yields on government securities (G-secs). Small savings have emerged as a key source of financing the government deficit. <p>Small savings instruments can be classified as</p> <ul style="list-style-type: none"> Postal Deposits comprising savings account, recurring deposits, time deposits of varying maturities and monthly income scheme. Savings Certificates: National Small Savings Certificate (NSC) and Kisan Vikas Patra (KVP). Social Security Schemes: Sukanya Samriddhi Scheme, Public Provident Fund (PPF) and Senior Citizens' Savings Scheme (SCSS).
Air Suvidha system	<p>In News: Union Health Minister Dr. Mansukh Mandaviya reviewed Air Suvidha system and RT-PCR testing facilities for international passengers at the Indira Gandhi International Airport, New Delhi.</p> <p>What is Air Suvidha?</p> <ul style="list-style-type: none"> Air Suvidha is a system of self-reporting and exemption for all international passengers arriving from at-risk countries. All passengers can apply online for a self-declaration/self-reporting form to declare their current health status. The mandatory self-reporting application is forwarded to the Airport Health Organisation (APHO) under the Ministry of Health and Family Welfare. Passengers can then refer to their email for the updated application document and approval. Using the Self Reporting application's request number, passengers can auto-fill the application for exemption as well.
Mali Parbat bauxite mine	<p>In News: Public hearing on the environment clearance (EC) for Mali Parbat Bauxite Mining by Hindalco Industries in Koraput recently was presided over by the district judicial officer.</p> <p>Mali Parbat Bauxite mine:</p> <ul style="list-style-type: none"> It is located in Pottangi tehsil of Koraput district of Odisha. The bauxite mined out from the Maliparbat mine will be used in existing Hindalco's Alumina refineries located at Renukoot (Uttar Pradesh), Muri (Jharkhand) & Belgaum (Karnataka). Some rivers near the mine are Kukurhaghat Nala, Kunduli Nala and Kolab River. Hindalco Industries is one of the leading producers of aluminium in the country. The company business involves bauxite mining to alumina refining. Hindalco Industries was granted EC for an area of 268.110 hectares of Maliparbat bauxite mine in 2006. <p>Bauxite mining in India:</p>

- India is **rich** in bauxite reserves – 3,896 million tonnes as in 2015.
- About 77% resources are of Metallurgical grade.
- There were 157 reporting mines in 2016-17 out of which 56 are major mines.
- The share of Public Sector mines was about 31 % of the total production in 2016-17
- Many indigenous and tribal people live near the mines, which shows the quantity of bauxite in India.



What is Bauxite?

- The raw material of aluminium is known as bauxite ore.
- It is generally found in the region close to **laterite rocks**.
- Laterite rocks are commonly found in the **peninsular and coastal regions** – plateaus and hill ranges.

Uses of bauxite ore:

- Bauxite is used as a **primary ingredient in making aluminium** – It consists of 80% of bauxite. It is used to convert into aluminium and make aluminium products.
- It is also used as a **corrector**. In the case of any dent or damage, bauxite ore is used in the steel industry to **repair the damage**.
- Bauxite is also used in the industries of **rubber, water purifying machines, plastic, paper making**, etc.

The distribution of Bauxite ore in India :

- Bauxite ore is mainly found in the **peninsular, coastal and hill ranges**.
- Odisha (51%)
- Andhra Pradesh (16%)
- Gujarat (9%)
- **Odisha** is the largest bauxite ore-producing state.
- The popular mines of bauxite lie in Odisha's districts of Sambalpur, Kalahandi, Sundargarh etc.
- There are two famous bauxite ore mines in Odisha – **Panchpatmali mines and Gandha Mardan**.

RuPay Debit Cards and BHIM UPI

In News: Union Cabinet gave its nod to the **incentive scheme for the promotion of RuPay Debit Cards and low-value BHIM-UPI transactions**.

About the scheme:

- The scheme has a financial outlay of INR 2600 crore.
- The decision will help in building a robust digital payment system.

RuPay Debit Cards:

- It is the first of its kind **global** card payment network of India
- It was conceived and launched by the **National Payments Corporation of India (NPCI)** in **2012**.
- The name, derived from 'Rupee and Payment', emphasises India's very own initiative for Card payments.
- It has wide acceptance at ATMs, POS devices and e-commerce websites across India.
- It is a highly secure network that protects against anti-phishing.
- It fulfils RBI's vision of initiating a 'cashless economy' by establishing a domestic, open and multilateral system of payments.
- It facilitates electronic payment at **all Indian banks** and financial institutions.
- NPCI maintains ties with Discover Financial, JCB to enable RuPay card scheme to gain international acceptance
- RuPay cards are issued by more than 1100 banks including public sector banks, private, regional banks and cooperatives.
- Its **10 core promoter banks** include SBI, PNB, Canara bank, BOB, Union Bank of India, Bank of India, ICICI Bank, HDFC bank, Citibank and HSBC

BHIM UPI:

- Bharat Interface for Money (BHIM) is a **payment app** that lets you make simple, easy and quick transactions using Unified Payments Interface (UPI).
- Pioneered and developed by **National Payments Corporation of India (NPCI)**, BHIM has been launched in **2016** to bring in **Financial Inclusion** to the nation and a digitally empowered society.
- One can make **direct bank payments** to anyone on UPI using their **UPI ID or scanning their QR** with the BHIM app.
- One can **also request money** through the app from a UPI ID.

Basmati Rice

In News: In a bid to promote the business around basmati rice, the Food Safety and Standards Authority of India (FSSAI) **notified standards for basmati rice** based on parameters such as average size of grains and their elongation ratio after cooking, to be enforced from August 1, 2023.

- It has set the maximum limits for moisture, amylose content, uric acid, damaged grains and presence of non-basmati rice.

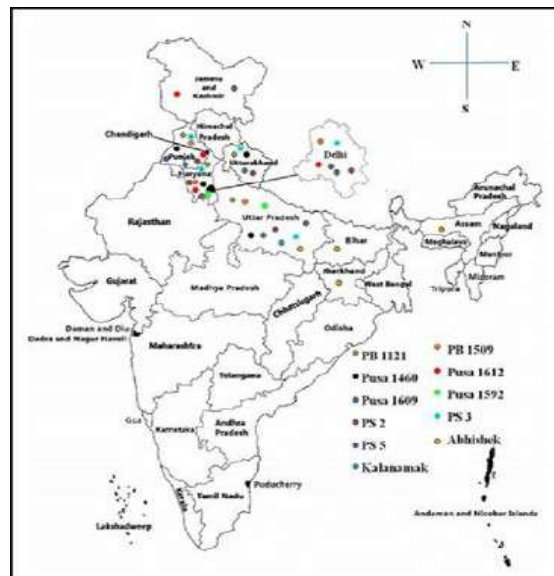
About the standards:

- The standards are applicable to brown basmati rice, milled basmati rice, parboiled brown basmati rice and milled parboiled basmati rice.
- Aim – To establish fair practices in trade of basmati and to protect consumer interest
- To ensure the basmati rice sold in the market has the **characteristic fragrance** identified with this variety and is free from artificial fragrances and colouring.

Basmati Rice:

- Basmati rice is cultivated in the **Himalayan foothills** of the Indian subcontinent.
- The specific agro-climatic conditions, processing techniques such as harvesting and ageing are said to make this rice **unique**.

- In India, rice grown in specific parts of Punjab, Haryana, Himachal Pradesh, Delhi, Uttarakhand, Uttar Pradesh and Jammu & Kashmir can be labelled as basmati.
- Basmati rice is **exported** out of India and had an annual forex earning of Rs 25,053 crore during 2021-22.
- India accounts for **two-thirds of the global supply** of basmati rice
- Basmati rice is just one of the thousands of rice varieties available in India. However, this **fragrant** rice has invited the most controversy.
- In 2020, India's application for a geographical indication tag recognised in the European Union market was put on hold after Pakistan opposed the move.
- A patent contested in 2000 by Centre for Scientific and Industrial Research (CSIR), (India's premier science and industry organisation) said **the term 'basmati' could be used only for rice grown in India and Pakistan.**
- In 2001, a final decision ensured that the US company could no longer use basmati in their name.



Food Safety and Standards Authority of India (FSSAI):

- It is an **autonomous, statutory body** established under the Food Safety and Standards Act, 2006 (FSS Act).
- The Act aims to establish a **single reference point** for all matters relating to food safety and standards, by moving from multi-level, multi-departmental control to a single line of command.
- Ministry: **Ministry of Health & Family Welfare.**
- It comprises a **Chairperson and twenty two members** out of which **one – third are to be women.**
- The **Chairperson** of FSSAI is appointed by the **Central Government.**
- The primary responsibility for enforcement is largely with the **State Food Safety Commissioners.**

Manipur's Heimang

Context: Despite recent studies highlighting the Manipur's Heimang's remarkable adaptability, it hasn't yet been used much in commerce.

About Heimang:

- The Heimang tree grows widely in Manipur and other north-eastern regions
- Its fruit have a citrus-like tartness and, it is packed with nutrients such as polyphenols, flavonoids, and antioxidants.
- Traditional healers of Manipur called Maibas or maibis, prescribe heimang for common gastrointestinal problems like diarrhoea and dysentery.
- It is also recommended to eat water-soaked fruit for **indigestion and stomach ulcer.**

	<ul style="list-style-type: none"> The research found that compounds isolated from the stem of the heimang tree can significantly suppress HIV-1 activity in vitro. Local communities in the state also use heimang leaves to prepare a herbal shampoo called chinghi by boiling them with rice water.
<p>Viscose Staple Fibre</p>	<p>Context: The Association of Man-made Fibre Industry of India (AMFII) has appealed to the Union Finance Ministry to accept the recommendations of the Directorate General of Trade Remedies (DGTR) on levy of anti-dumping duty (ADD) on imports of Viscose Staple Fibre from Indonesia.</p> <p>About The Association of Man-made Fibre Industry of India (AMFII)</p> <ul style="list-style-type: none"> The AMFII was set up in 1951 as “The Rayon Manufacturers’ Association”. In 1959, its name was changed to “Association of Man-Made Fibre Industry of India” to include all the modern Man-Made Fibres of 20th Century origin thereby expanding its scope and membership. Thus, the Membership of the AMFII varied from time to time and included both Synthetic and Cellulosic Man-Made Fibres and Filament Yarn Manufacturers. On 29th April 1987, the AMFII was registered as a Private Limited Company under section 25 A of the Companies Act 1956. It was also registered under section 12 of the Income Tax Act as an organization for charitable purpose for “advancement of an object of general public utility”. The main object of the Association is to help the man-made fibre industry in India to formulate general policy on production and development of the industry. The Association also acts as a liaison body on behalf of the industry and communicates with the Chambers of Commerce and other public bodies within and outside India, with a view to promote and protect the man-made fibre industry and trade. The Association has its Registered Office in Mumbai. It has a Branch Office in New Delhi. <p>About Viscose Staple Fibre:</p> <ul style="list-style-type: none"> Viscose Staple Fiber (VSF), is a natural and biodegradable fiber which has characteristics that are similar to cotton. Due to its versatility, VSF is widely used for manufacturing: Apparels, Home textiles, Dress materials, Knitted wear and Non-woven applications. <p>About Anti-Dumping Duty:</p> <ul style="list-style-type: none"> Anti-dumping is a protectionist tariff, imposed by a domestic government on foreign imports that are at a price lower than the price it normally charges in its own home market. Anti-dumping duty is imposed as a remedy to the distortive trade which arises due to the dumping of goods. The use of anti-dumping measures as an instrument of fair competition is permitted by the World Trade Organisation.



	<ul style="list-style-type: none"> Where dumping occurs, the WTO allows the government of the affected country to take legal action against the dumping country as long as there is evidence of genuine material injury to industries in the domestic market. The Government must show that dumping took place, the extent of the dumping in terms of costs, and the injury or threat to cause injury to the domestic market.
Alternate Investment Fund and Credit Default Swap	<p>In News: The Securities and exchange board of India has allowed alternative investment funds to participate in credit default swaps (CDS) as protection for both buyers and sellers.</p> <ul style="list-style-type: none"> Category I and Category II AIFs may buy CDS on underlying investment in debt securities, only for the purpose of hedging. Category III AIFs may buy CDS for hedging or otherwise, within permissible leverage <p>Alternate Investment Fund(AIFs):</p> <ul style="list-style-type: none"> In India, AIFs are defined in Regulation 2(1) (b) of Securities and Exchange Board of India (Alternative Investment Funds) Regulations, 2012. Dept of commerce recommends it and Ministry of Finance levies it. Meaning – It refers to any privately pooled investment fund, (whether from Indian or foreign sources), in the form of a trust or a company or a body corporate or a Limited Liability Partnership (LLP). They include angel funds, commodities, real estate, venture capital, private equity, etc. Categories of AIFs Category I: Mainly invests in start- ups, SME's or any other sector which Govt. considers economically and socially viable Category II: private equity funds or debt funds for which no specific incentives or concessions are given by the government or any other Regulator Category III : hedge funds or funds which trade with a view to make short term returns or such other funds which are open ended and for which no specific incentives or concessions are given by the government. <p>Credit Default Swap (CDS)</p> <ul style="list-style-type: none"> They are a type of insurance, introduced by JP Morgan It is used for hedging counter-party concentration risk and credit risks It is a contract between two parties, called protection buyer and protection seller against default risk by a particular company. The company is called the reference entity and the default is called credit event. Under the contract, the protection buyer is compensated for any loss emanating from a credit event in a reference instrument. In return, the protection buyer makes periodic payments to the protection seller. In the credit event, the buyer receives the face value of the bond or loan from the protection seller. From the seller's perspective, CDS provides a source of easy money if there is no credit event. If the credit event does not occur before the maturity of the loan, the protection seller does not make any payment to the buyer.

	<ul style="list-style-type: none"> • The settlement of the CDS takes place either through cash settlement or physical settlement. • There are different varieties of CDS, like binary CDS, basket CDS, contingent CDS and dynamic CDS. • There are different types of credit events such as bankruptcy, failure to pay, and restructuring. • Asset-backed securities (ABS) is the most common type of CDS. • CDS can be structured either for the event of shortfall in principal or shortfall in interest. There are three options for calculating the size of payment by the seller to the buyer. • Fixed cap: The maximum amount paid by the protection seller is the fixed rate. • Variable cap: The protection seller compensates the buyer for any interest shortfall and the limit set is Libor plus fixed pay. • No cap: In this case, the protection seller has to compensate for shortfall in interest without any limit. <p>Uses:</p> <ul style="list-style-type: none"> • Although used for hedging credit risks, credit default swap (CDS) has been held culpable for vitiating financial stability of an economy.
RBI's contingency fund	<p>In News: THE SURPLUS available with the Reserve Bank of India for transfer or the RBI dividend to the Union government is likely to remain low in the current financial year ending March 2023.</p> <p>Contingency Fund:</p> <ul style="list-style-type: none"> • This is a specific provision meant for meeting unexpected and unforeseen contingencies, including depreciation in the value of securities, risks arising out of monetary/exchange rate policy operations, systemic risks and any risk arising on account of the special responsibilities enjoined upon the Reserve Bank. • This amount is retained within the RBI. <p>Currency and Gold Revaluation Account (CGRA)</p> <ul style="list-style-type: none"> • It is maintained by the Reserve Bank to take care of currency risk, interest rate risk and movement in gold prices. • Unrealised gains or losses on valuation of foreign currency assets (FCA) and gold are not taken to the income account but instead accounted for in the CGRA. • Net balance in CGRA, therefore, varies with the size of the asset base, its valuation and movement in the exchange rate and price of gold. • CGRA provides a buffer against exchange rate/ gold price fluctuations. It can come under pressure if there is an appreciation of the rupee vis-à-vis major currencies or a fall in the price of gold. • When CGRA is not sufficient to fully meet exchange losses, it is replenished from the CF. <p>IRA-FS and IRA-RS accounts:</p> <ul style="list-style-type: none"> • The unrealised gains or losses on revaluation in foreign dated securities are recorded in the Investment Revaluation Account Foreign Securities (IRA-FS).

- Similarly, the unrealised gains or losses on revaluation is accounted for in Investment Revaluation Account-Rupee Securities (IRA-RS).
- In the **Investment Revaluation Account-Foreign Securities (IRA-FS)**, the foreign dated securities are marked-to market on the last business day of each week ending Friday and the last business day of each month and the unrealised gains or losses are transferred to the IRAFS.

Economic capital framework

- Bimal Jalan-led panel was constituted to review the **RBI's Economic Capital Framework (ECF)**.
- **Appropriate level of risk provisions to be made under Section 47 of the Reserve Bank of India Act, 1934.**
- The RBI transfers surplus to the government as per the economic capital framework (ECF) adopted by the RBI board
- The RBI normally pays the **dividend from the surplus income** it earns on investments and valuation changes on its dollar holdings and the fees it gets from printing currency, among others.
- The RBI should maintain a **Contingent Risk Buffer**, which mostly comes from the CF, **of between 5.5-6.5% of the central bank's balance sheet.**
- RBI should put in place a framework for assessing the market risk of its off-balance sheet exposures in view of their increasing significance.
- The surplus distribution policy should move away from targeting total economic capital alone.
- A review of RBI's economic capital framework should be conducted every five years.



INTERNATIONAL RELATIONS



Arab Spring

Context: K.P. Fabian's newly launched book, 'The Arab Spring That Was and Wasn't' was seen in the news recently.

About Arab Spring:

- The Arab Spring was a series of pro-democracy uprisings that enveloped several largely Muslim countries, including **Tunisia, Morocco, Syria, Libya, Egypt and Bahrain**.
- When protests broke out in **Tunisia in late 2010** and spread to other countries, there were hopes that the **Arab world was in for massive changes**.
- The expectation was that in countries where people rose, such as **Tunisia, Egypt, Yemen, Libya, Bahrain and Syria**, the old autocracies would be replaced with new democracies.
- But **Tunisia is the only country where the revolutionaries outwitted the counter-revolutionaries**.
 - They overthrew Zine El Abidine Ben Ali's dictatorship, and the country transitioned to a multi-party democracy.
- But except Tunisia, the country-specific stories of the Arab uprising were tragic



Y20 Summit

In News: Recently Union Minister for Youth Affairs and Sports Anurag Thakur launched the themes of the Y20 summit.

Y20 summit:

- The **first ever** Y20 (Youth 20) Summit is to be **held in India** on the sidelines of the G20 Summit.
- The Y20 Summit is likely to be held in **Guwahati**.
- It will focus on themes of future of work; climate change and disaster risk reduction; peacebuilding and reconciliation; and youth in democracy.
- Y20 will focus on **global youth leadership and partnership**.

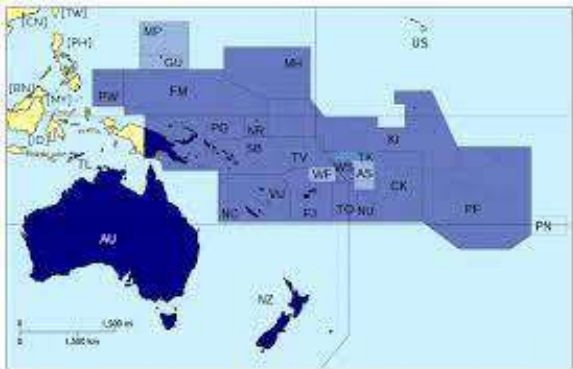
Pacific Island Forum

In News: Pacific island nations are urging Japan to postpone the release of water from the stricken **Fukushima nuclear power plant** due to concerns that fisheries will be contaminated, according to the Pacific Island Forum (PIF)

- The **PIF, a regional bloc of 18 island nations**, claims that releasing the water will have a significant impact on fishing grounds that are vital to island economies and supply up to half of the world's tuna fish.

Pacific Island Forum (PIF)

- The Pacific Islands Forum is the region's premier **political and economic policy** organisation.

	<ul style="list-style-type: none"> Founded in 1971 It comprises 18 members: 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.  <ul style="list-style-type: none"> The Forum's Pacific Vision is for a region of peace, harmony, security, social inclusion and prosperity, so that all Pacific people can lead free, healthy, and productive lives. The Pacific Islands Forum works to achieve this by fostering cooperation between governments, collaboration with international agencies, and by representing the interests of its members. The Forum currently recognises 18 dialogue partners including China, India, and the United States. The work of the Forum is guided by the Framework for Pacific Regionalism, which was endorsed by Forum Leaders in 2014. It sets out the strategic vision, values, objectives and approaches to achieve deeper regionalism in the Pacific.
<p>World Economic Forum</p>	<p>In News: The Annual Meeting of World Economic Forum (WEF) will begin at Davos in Switzerland.</p> <ul style="list-style-type: none"> The theme for this year's WEF meeting is, 'Cooperation in a Fragmented World'. <p>World Economic Forum (WEF)</p> <ul style="list-style-type: none"> It is a Swiss nonprofit foundation established in 1971, based in Geneva, Switzerland. It is recognised by the Swiss authorities as an international institution for public-private cooperation. The Founder and Executive Chairman of WEF is Klaus Schwab <p>Mission</p> <ul style="list-style-type: none"> WEF is committed to improving the situation of the world by engaging business, political, academic, and other leaders of society to shape global, regional, and industry agendas. <p>Major reports by WEF</p> <ul style="list-style-type: none"> Energy Transition Index Global Competitiveness Report Global IT Report (WEF along with INSEAD, and Cornell University publishes this report), Global Gender Gap Report Global Risk Report Global Travel and Tourism Report
<p>United Nations Institute for Water, Environment</p>	<p>Context: A report was recently released by United Nations Institute for Water, Environment and Health (UNU-INWEH) that stated that world will lose 26% storage by 2050 to trapped sediment.</p> <p>About UNU-INWEH:</p>

<p>and Health (UNU-INWEH)</p>	<ul style="list-style-type: none"> • UNU-INWEH was established in 1996 as subsidiary body of the United Nations University (UNU) institutes and an academic arm of the UN. • Its operations are secured through long-term host-country and core-funding agreements with the Government of Canada. • The Institute is located in Hamilton, Canada; its facilities are supported by McMaster University. • It specializes on water for development, working, primarily with countries in the Global South, and addressing water issues of global significance. • It is the UN Think Tank on Water created by the UNU Governing Council. • UNU-INWEH is the only Institute in UNU that focuses entirely and solely on water issues. • It is also the only entirely water-focused UN entity in Canada. • UNU-INWEH is linked to key processes in the UN system, and represents the entire UNU in UN-Water – a cross-agency group in the UN and international partners working on water and sanitation issues globally.
<p>Intergovernmental Technical Working Group on Animal Genetic Resources for Food and Agriculture (WG AnGR)</p>	<p>Context: In the recently concluded 12th Session of the Intergovernmental Technical Working Group (ITWG) on Animal Genetic Resources (AnGR) at Rome in January 2023, India was elected as Vice-Chair and represented Asia and Pacific region.</p> <p>About WG AnGR:</p> <ul style="list-style-type: none"> • The Food and Agricultural Organization (FAO)'s Commission on Genetic Resources for Food and Agriculture (CGRFA) established the Intergovernmental Technical Working Group on Animal Genetic Resources for Food and Agriculture at its Seventh Regular Session, in 1997. <p>About Food and Agricultural Organization:</p> <ul style="list-style-type: none"> • FAO is a United Nations specialized agency that leads international efforts to end hunger. • Every year on October 16th, the world celebrates World Food Day. <ul style="list-style-type: none"> ◦ The day commemorates the anniversary of the FAO's founding in 1945. • It is one of the United Nations food aid organizations based in Rome (Italy). • The World Food Programme and the International Fund for Agricultural Development (IFAD) are its sister organizations. <p>Flagship Publications of FAO:</p> <ul style="list-style-type: none"> • The State of World Fisheries and Aquaculture (SOFIA). • The State of the World's Forests (SOFO). • The State of Food Security and Nutrition in the World (SOFI). • The State of Food and Agriculture (SOFA). • The State of Agricultural Commodity Markets (SOCO). <p>About Commission on Genetic Resources for Food and Agriculture (CGRFA):</p> <ul style="list-style-type: none"> • The Commission on Genetic Resources for Food and Agriculture is the only permanent intergovernmental body that specifically addresses all components of biological diversity for food and agriculture.

- It aims to reach **international consensus** on policies for the **sustainable use and conservation of genetic resources for food and agriculture and the fair and equitable sharing of benefits derived from their use.**
- The Commission initiates, oversees and guides the preparation of global sectoral and cross-sectoral assessments of genetic resources for food and agriculture.
- As of July 2014, **178 countries and The European Union are Members of the Commission.**
- Membership of the Commission, which is **open to all Members of FAO**, shall be composed of those Members which notify the **Director-General in writing of their desire to become members.**
- Membership of the Commission does not place any financial burden on the Government.
- The Commission, so far, has established the following intergovernmental technical working groups:
 - **Intergovernmental Technical Working Group on Animal Genetic Resources for Food and Agriculture (WG AnGR)**
 - **Intergovernmental Technical Working Group on Aquatic Genetic Resources for Food and Agriculture (WG AqGR)**
 - **Intergovernmental Technical Working Group on Forest Genetic Resources (WG FGR)**
 - **Intergovernmental Technical Working Group on Plant Genetic Resources for Food and Agriculture (WG PGR).**



HISTORY AND ART & CULTURE



Sarsa Rivulet

Context: As Sikhs across India and the rest of the world observe the 356th birth anniversary of Guru Gobind Singh, a rivulet in north India associated with a key moment in his life is gasping for breath.

- The Sarsa was where the Guru Gobind Singh's family got separated in 1704, never to be together again.
- Pharmaceutical waste being discharged either directly or indirectly into the Sarsa from nearby Industries.

About Sarsa river:

- The river rises in the Shiwalik foothills of Southern Himachal Pradesh.
- It flows in the western part of Solan district, then enters into Punjab near Diwari village.
- Sarsa joins the river Sutlej at the eastern part of Punjab.
- A Gurudwara named Parivar Vichora is situated near the bank of river Sirsa in the village Majri.

About Guru Gobind Singh:



Mural Art

Context: The Wall of Peace, a great work of modern mural art on the 700-feet long compound wall of Government Vocational Higher Secondary School at Cherpulassery, was recently inaugurated.

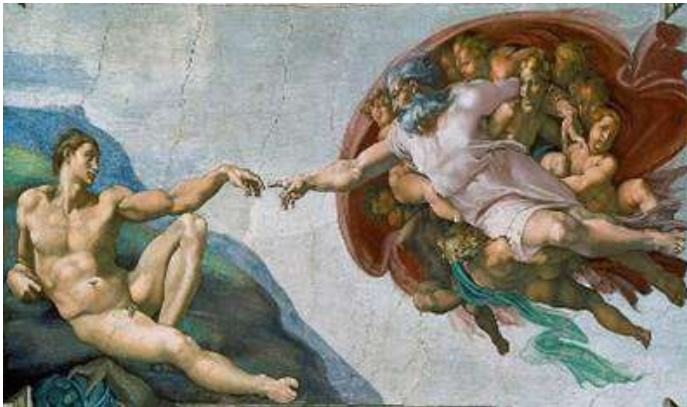
About Mural Art:

- The word 'mural' derived from the Latin word 'murus' which means wall.
- It can be defined as any piece of artwork painted or applied directly onto a wall, ceiling or other larger permanent surfaces, flat, concave or convex, to be precise.
- India has a rich tradition of mural wealth. The treatises such as Vishnudharmottara, Silpashastra, Manasollasa, Shilparatna, Narada-shilpa-shastra and Kashyapa-shilpa, discuss at length all aspects of painting, including murals.



Types of Indian Mural Paintings:

- **Tempera Painting:** Tempera painting is done by preparation of pigment into a water-miscible medium.




- **Oil Painting:** Oil Painting is a standard of painting in oil colours which grips suspension of pigments into drying oils.



- **Fresco Painting:** Fresco Painting is an ancient practice that engrossed painting of water-based pigments on recently applied plaster, usually on wall façade.

**Mural Paintings in India:**

- There are **fragments of paintings of the time of Ajanta** which survive at many **Buddhist cave sites**, including **Pitalkhora near Ellora, in Maharashtra**.
- Nine caves were excavated on the slopes of the **Vindhya hills above the Bagh river** during the reign of the Guptas, between the 4th and 6th centuries A.D.
- Very little of the paintings survive in the **6th century Hindu caves of Badami in Karnataka**.
- Expression to themes relating to Siva in the paintings in the **temples of Panamalai and Kailashanatar in Kancheepuram**.
- In the 9th century **Jain cave of Sittannavasal in Tamil Nadu**, there is a marvellous lotus pond painted on the ceiling.

	<ul style="list-style-type: none"> The monastery of Alchi is an oasis of beauty and colour in the midst of the vast and barren landscape of Ladakh. <ul style="list-style-type: none"> One of the masterpieces of the Alchi paintings is the Green Tara. Mural Paintings at Lepakshi temple which was built in the 16th century by the Nayaka brothers, Virupanna and Viranna, at a centre of trade and pilgrimage in the Vijayanagar empire.
<p>Mughal Gardens</p>	<p>In News: The iconic Mughal Gardens at the Rashtrapati Bhavan renamed as 'Amrit Udyan'.</p> <p>About Mughal Gardens</p> <ul style="list-style-type: none"> In Babur Nama, Babur says that his favourite kind of garden is the Persian charbagh style (literally, four gardens). The charbagh structure was intended to create a representation of an earthly utopia – Jannat – in which humans co-exist in perfect harmony with all elements of nature. From the gardens surrounding Humayun's Tomb in Delhi to the Nishat Bagh in Srinagar, all are built in this style – giving them the moniker of Mughal Gardens. A defining feature of these gardens is the use of waterways, often to demarcate the various quadrants of the garden.  <p>History of Mughal gardens</p> <ul style="list-style-type: none"> In 1911, the British decided to shift the Indian capital from Calcutta to Delhi. About 4,000 acres of land was acquired to construct the Viceroy's House with Sir Edwin Lutyens being given the task of designing the building on Raisina Hill. Lutyens' designs combined elements of classical European architecture with Indian styles, producing a unique aesthetic that defines Lutyens' Delhi till date. Lady Hardinge, the wife of the then Viceroy, urged planners to create a Mughal-style garden. It is said that she was inspired by the book Gardens of the Great Mughals (1913) by Constance Villiers-Stuart as well as her visits to the Mughal gardens in Lahore and Srinagar.
<p>Fatima Sheikh</p>	<p>In News: On her 192nd birth anniversary in 2022, Fatima Shaikh was honoured with a Google Doodle on her birthday.</p> <p>Fatima Sheikh:</p> <ul style="list-style-type: none"> She was a pioneering teacher, anti-caste activist, proponent of girls' education, and social reformer in 19th century Maharashtra. She befriended Savitribai Phule when the two were enrolled in a teachers' training programme by American missionary Cynthia Farrar. While in the programme, both developed a bond over their politics and mission to educate those who had been traditionally denied knowledge and education. She was a pioneering figure whose life, at a time when regressive attitudes towards women and Bahujans pervaded society, is a testimony to her courage. No surviving documents of Fatima Sheikh are available today.

Contributions:

- In 1848, she started the **first girls' school in the country**, along with Savitribai and Jyotirao Phule, amidst loud, threatening opposition.
- The school was opened inside the premises of Fatima's home in Pune.
- Other schools for Dalits and women followed, with Fatima and Savitribai going to individual families across the town in attempts to persuade them into enrolling their children.
- As many from their own community abandoned them, Fatima Sheikh and her brother stood strongly with the Phules and the mission to educate girls and Bahujans.

UNESCO Heritage Sites in Maharashtra

Ellora Caves:

- Situated in Aurangabad district, the Ellora Caves are just awe-inspiring.
- The complex features 34 caves, of which 17 are Hindu caves, 12 are Buddhist caves, and 5 are Jain caves.
- This is also the place where the renowned Kailasa Temple exists, and is full of intricate rock carvings.
- The primary attraction of Ellora is Kailash Temple (cave16) is the most remarkable, and is one of the main attractions that lure visitors to Ellora Caves.
- The caves were granted UNESCO World Heritage Site status in **1983**



Elephanta Caves



- This is another **UNESCO World Heritage Site in Maharashtra**, which is a must-visit and highlights the peace and ideology reflected by Buddhism.
- These caves are a network of sculpted caves, and is the oldest historic site
- The Portuguese colonists first discovered the caves and named them **Elephanta Caves after spotting elephant statues on the caves**.
- There are a total of seven caves that date back between the 5th and 8th centuries, and were listed as heritage sites in **1987**.




Ajanta Caves

- It comprises a group of 30 rock-cut caves, and are also known for their murals.
- Home to famous Buddhist religious art, this site serves as a great example of ancient Indian art.
- There are a total of 29 caves here, which are all divided into periods, denoting the time when they were built.
- If reports are to go by, they were carved between the 2nd century BCE through CE 650, and feature various stories from the Jataka tales.
- It was declared a World Heritage Site in **1983**.




	<p>Chhatrapati Shivaji Terminus</p> <ul style="list-style-type: none"> • Earlier, it was known as the Victoria Terminus, and was completed in 1888. • Its construction started in 1878 while its Victorian Gothic Revival architecture stands out amid the hustle bustle of Mumbai. • Spread across a 2.85 hectare area, this place remains extremely busy almost all the time. • It's a historic railway station, which was added to the list of UNESCO World Heritage Sites in 2004. • This 133-year-old heritage building is not only one of the biggest, but also one of the busiest railway stations in India.  <p>Victorian Gothic & Art Deco Ensembles of Mumbai</p> <ul style="list-style-type: none"> • The Victorian Gothic and Art Deco Ensembles of Bombay will offer you a collection of 19th century Victorian neo-Gothic public buildings and 20th century art deco buildings in the Fort area of Mumbai. • The large edifices serve as relics from a different time, which are so spectacular that they will leave you awed. • You can find these buildings around the Oval Maidan.
<p>Ottanthullal</p>	<ul style="list-style-type: none"> • Ottanthullal (or Thullal, in short) is recite-and-dance art-form of Kerala. • It is famous for its humour and social satire, and marked by its simplicity as opposed to more complex dance-forms like Kathakali and Koodiyattam. • Strictly follows principles of Natya Shastra written by Bharatmuni. • It is performed solo and is conducted during temple festivals from temple premises. • The songs are very fast and are written in Malayalam. • Along with the dancer, there is also a singer who repeats the slokas. • The musical instruments used are Mridangam, Elathalam, Maddalam. • The performer is called Thullalkaran. • A great Malayalam poet called Kunchan Nambiyar introduced Thullal in the 18th century. • The makeup is like Kathakali. 
<p>Maghi Mela</p>	<p>Context: Maghi Mela has been celebrated in the city of Sri Muktsar Sahib in Punjab for centuries in memory of 40 Sikh warriors who were killed fighting the Mughals in the Battle of Khidrana in 1705.</p> <p>About Maghi Mela:</p> <ul style="list-style-type: none"> • The Maghi fair is held to honour the memory of the forty Sikh warriors killed during the Battle of Muktsar in 1705.

	<ul style="list-style-type: none"> It is held in the holy city of Sri Muktsar Sahib every year in January, or on the month of Magh according to the Nanakshahi calendar. Guru Gobind Singh chose Maghi as one of the three festivals to be celebrated by Sikhs (the others are Baisakhi and Bandhi chor divas (Diwali)). Nanakshahi calendar was designed by Sikh scholar Pal Singh Purewal to replace the Bikrami calendar, to work out the dates of gurgurb and other festivals. It is one of the most important festivals for Sikhs. <p>History of the battle:</p> <ul style="list-style-type: none"> Muktsar, originally called Khidrana, was named as Muktsar ("the pool of liberation"). These forty Sikhs, led by their leader Mahan Singh, had formally deserted Sri Guru Gobind Singh in the need of hour, and signed a written memorandum to the effect. The memorandum (bedawa) was torn down by the Guru himself just before Mahan Singh died.
Parshuram Kund Festival	<p>In news: The Prime Minister, recently has shared glimpses of Parshuram Kund Festival in Arunachal Pradesh.</p> <p>About the festival:</p> <ul style="list-style-type: none"> Also known as The Kumbh of Northeast. It is believed that a dip in the holy water of Parshuram Kund washes away all the sins. Parashuram Kund is situated within the Kamlang Reserve Forest area. This place on the Lohit River carries a strong mythological link with the legend of Parshurama, a Hindu sage. On Pausa sankranti, a Parshuram Mela is held near this place on 4th January every year, which is attended by innumerable saints and devotees from across the nation, despite the severe cold. This place on the Lohit River carries a strong mythological link with the Kalika Purana, the Srimad Bhagavat and the Mahabharata.
Gaan Ngai festival	<p>Context: Recently Gaan Ngai festival was celebrated in the state of Manipur.</p> <p>About Gaan Ngai festival:</p> <ul style="list-style-type: none"> Gann Ngai is a regional festival in the state of Manipur. It falls in either December or January in the western calendar. It is also known as Chakaan Gaan Ngai and is the biggest festival of Zeliangrong community. Gann Ngai takes place after the end of the harvest season. Gaan-Ngai literally means the festival of winter season. Gaan or Ganh means winter or dry season and Ngai means festival. The Zeliangrong people, comprising the Zemei, Liangmei and the Rongmei tribes, are one of the major indigenous communities living in Manipur. 

	<ul style="list-style-type: none"> The most significant part of the festival is the worshipping of “Tingkao Ragwang”, which is the Supreme God. At the beginning of this festival the head of the village creates a ‘new fire’ by rubbing bamboo cord with bamboo gauze placed under a piece of dry wood. This traditional method of making fire is called “Mhai Lapmei”, meaning extraction of the sacred fire.
Banjaras and Hakku Patra	<p>Context: Recently Prime Minister of India symbolically distributed Hakku Patra (land title deeds) to five families of the Banjara (Lambani) community, a nomadic Scheduled Caste group in Karnataka.</p> <p>About Banjaras:</p> <ul style="list-style-type: none"> The Banjaras are a key scheduled caste sub-group in Karnataka, although they are considered to be a tribal group in terms of the lives they lead. The Banjara are a historically nomadic trading caste who may have origins in the Mewar region of what is now Rajasthan. Fire dance, ‘Ghumar’ dance and Chari dance are the traditional dance forms of the Banjaras. Banjaras have a sister community of singers known as Dadhis or Gajugonia. They are traditionally travelled from village to village singing songs to the accompaniment of sarangi. The Banjara community has been listed as a Scheduled Tribe in the states of: Andhra Pradesh, Telangana and Odisha. They were designated as an Other Backward Class in: Chhattisgarh, Gujarat, Haryana, Madhya Pradesh, Maharashtra and Rajasthan. They were designated as a Scheduled Caste in: Karnataka, Delhi and Punjab. <p>About Hakku Patras or title deeds:</p> <ul style="list-style-type: none"> A title deed is a property ownership document, and the bearer of the document owns the land. The title deeds enable owners to avail of bank loans with the said document. They will also be eligible to buy or sell land to which the title deed is granted by the government.
Sagol Kangjei	<p>Context: Recently Union Home Minister Inaugurated, 122-foot-tall statue of a polo player astride a Manipur Pony in Imphal. It is believed that Sagol Kangjei, the modern-day Polo game originated in Manipur.</p> <p>About Sagol Kangjei:</p> <ul style="list-style-type: none"> It is a sport indigenous to Manipur, in which players ride horses, specifically the Manipur Ponies, which are referenced in records dating back to the 14th century. The sport originated in Manipur and is associated with ancient manuscripts like Kangjeirol. Even festivals in Manipur such as Lai Haraoba Festival shows a play sequence in which Maibi (priestess) with a polo stick in hand goes out in search of a bride.



	<ul style="list-style-type: none"> There are no goalposts in traditional form as the players scores a point by hitting the ball out of the field.
Rajmata Jijau	<p>Context: Recently, the Prime Minister of India has paid tributes to Rajmata Jijau on her Jayanti.</p> <p>About Jijabai Bhonsle (12 January 1598 – 17 June 1674):</p> <ul style="list-style-type: none"> Jijabai was born to Mahalasabai Jadhav and Lakhuji Jadhav of Deulgaon, near Sindkhed, in present-day Maharashtra. Jijabai was married at an early age to Shahaji Bhosle. She was the mother of Shivaji, founder of the Maratha Empire. She died at Pachad village near Raigad Fort. <p>Role and Contributions of Jijabai Bhonsle:</p> <ul style="list-style-type: none"> She managed her husband's Jagir in Pune and developed it. Mentored a great person like Chhatrapati Shivaji Maharaj. She taught Shivaji about swarajya and raised him to be a warrior. She also renovated Kevashwar Temple and Tambadi Jogeshwari Temple.
Paigah Tombs complex	<p>Context: The necropolis (a large, designed cemetery with elaborate tomb monuments) of noblemen dating from the Asaf Jahi era known as Paigah Tombs complex in Hyderabad is set to be restored with funding by the U.S. Ambassadors Fund for Cultural Preservation.</p> <p>About Paigah Tombs complex:</p> <ul style="list-style-type: none"> Paigah Tombs or Maqbara Shams al-Umara, are the tombs belonging to the nobility of Paigah family, who were fierce loyalists of the Nizams. The Paigah tombs are among the major wonders of Hyderabad State which known for their architectural excellence. These tombs are 200 years old which represent the final resting places of several generations of the Paigah Nobles. One of the best examples of Indo Saracenic architecture, the tombs presents a beautiful blend of Asaf Jah and Rajputani style of architecture. Paigahs were the only noble family who were permitted by the Sultan to have their private army. These tombs are magnificent structures, decorated in stucco work, and represent the Mughal, Greek, Persian, Asaf Jahi, Rajasthani and Decani style of architecture. Stucco or render is a construction material made of aggregates, a binder, and water. The famous 'Jali' work makes it even more attractive. 
Gujarat's Harappan necropolis	<p>Context: A recent excavation at Juna Khatiya village of Kutch district Gujarat has revealed some new findings on burial practice of Harappan and early Harappan times.</p> <ul style="list-style-type: none"> Juna Khatiya village is a biggest cemetery of Harappan era. It has around 500 graves from 3,200 BCE to 2,600 BCE era. <p>Important findings from the Juna Khatiya village:</p>



- Burial structures, secondary memorials, cremation sites and pot burials.
- Burial structures shapes vary from rectangular to oval or circular.
- Rows of graves with- **skeletal remains, ceramic pots, plates and vases, beaded jewellery, and animal bones** that piqued their interest.
- Region demonstrates transition from **earth-mound**

burials to stone graves.

- Pottery have features and style **similar to early Harappan sites in Sindh and Baluchistan.**
- Rectangular graves were made of shale and sandstone, common rocks in the region.
- They were cut into natural soil without stone facings.
- There is **no metal artefact found.**

Significance of findings in Juna Khatiya village:

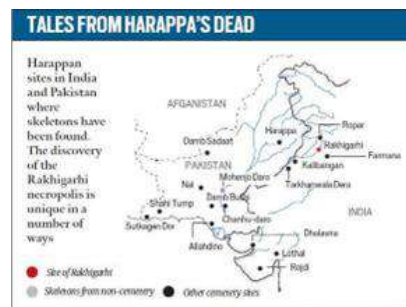
- Juna Khatiya can help in understanding cultural exchange between **the Sindh and Gujarat regions** in Early Harappan period due to the similar artefacts and customs.

Burial practices of Harappan/Indus Valley Civilization:

- Specific individuals, communities, and societies had their own methods of burial which suggests religious and cultural diversity.

Three types of burial customs:

- Complete burial of intact bodies.
- Full cremation with burial of bones or ashes- most common.
- Partial burials containing only the bones of the deceased.
- **Mohenjo-daro:** Most cremation urns did not contain human bone remains, but ornaments possessed during life, animal bones, ash and charcoal were found.
 - Majority of corpses were mummified in the act of death, as opposed to being disposed of later.
 - Only few populations were buried formally in ground, which means those people enjoyed some important status in society.
- **Rakhigarhi (Haryana):** Most of the burial pits were rectangular in shape, with vertically cut sides and flat bottoms.
 - They were generally arranged on the north-south axis with the head to the north.
 - Graves were humble in nature with exotic items like- **inscribed seals or ritual objects.**



Sammed Shikharji Jain Temple and Shetrunjay hill

Context: Members of the Jain community have been staging protests in many states over demands related to two holy sites — Sammed Shikhar on Parasnath hill in Jharkhand and Shetrunjay hill in Palitana of Gujarat.

About Sammed Shikharji Jain Temple:

- Shikharji, often spelled **Sammed or Sammet Shikharji**, is a holy place in the Indian state of **Jharkhand's Giridih district**.
- The highest mountain in the state of Jharkhand, **Parasnath Hill**, is where it is situated.
- Both **Digambara and Svetambara** consider it to be the **most significant Jain Tirtha (pilgrimage destination)**, as it is the location where **twenty of the twenty-four Jain tirthankaras**, together with numerous other monks, obtained Moksha.
- The **Jnatrdharmakatha**, one of the **twelve fundamental texts of Jainism**, has the first mention of **Shikharji as a Tirth (place of pilgrimage)**.
- **The Parsvanathacarita**, a biography of Prva written in the eleventh century, also makes mention of Shikharji.
- An **illustration of Parshavanatha's nirvana at Shikharji** can be seen in a palm-leaf manuscript of the **Kalpa Stra and Kalakacaryakatha** from the thirteenth century CE.
- In 1768 CE, **Jagat Seth rebuilt the temples** at Shikharji to their present configuration.
- The 1678 CE date is written in **Sanskrit at the bottom of the image**.
- There is a **Bhomiya temple at the foot of Shikharji (Taleti)**.
- There is a mural painting of every temple on Parasnath Hill on the walls of the Jain temple in the village of Madhuban.
- The earliest temple to hold a **Bhaktamara Stotra yantra** is the Svetambara Bhaktamara temple, founded by **Acharya Ramchandrasuri**.



About Shetrunjay Hill:

- The hills are located in **Palitana city of Bhavnagar district in Gujarat**.
- The hills are located on the **banks of river Shetrunji** and are considered as a sacred hill by Jains.
- The hills are bounded by **the Gulf of Khambhat in the south and Bhavnagar town in the north**.
- **Shatrunjaya translates to Place of Victory**.
- Jains believe that **Adinath, who is the founder of Jainism**, had meditated beneath the tree at the summit of this place.
- The temple complex here also has a **shrine of a Muslim saint, Angar Pir**.

About Shetrunji River:

- It is an eastward-flowing river in Gujarat.
- The river rises in the northeast of Gir Hills.

Savitribai Phule:
India's first woman teacher

Who was Savitribai Phule?

- A Dalit woman from the Mali community, Savitribai was born on January 3, 1831, in Maharashtra's Naigaon village.
- She was married off at the tender age of 10 to Jyotirao Phule
- He educated her at home and later, Jyotirao admitted Savitribai to a teachers' training institution in Pune.

	<ul style="list-style-type: none"> Throughout their life, the couple supported each other and in doing so, broke many social barriers. <p>Savitribai Phule, the social reformer is considered to be one of India's first modern feminists.</p> <ul style="list-style-type: none"> A revolutionary Indian woman who began the mission to educate women in India. She relentlessly fought against the dominant caste system and worked towards the upliftment of the marginalized. <p>Early Life and Work</p> <p>Savitribai went on to become India's first woman teacher and headmistress. It is her struggle and story that marks the beginning of modern Indian women's public life in India.</p> <ul style="list-style-type: none"> The extraordinary couple (married to Jyotirao) was engaged in a passionate struggle to build a movement for equality between men and women and a fight against the caste system. They dedicated their lives to spreading education and knowledge. They started the first school in the country for girls and the 'Native Library'. In 1863, they started a 'home for the prevention of infanticide' in their own house, to ensure the safety of pregnant and exploited widows. They also established the Satyashodhak Samaj (Society for Truth Seeking), initiating the practice of marriage without dowry or overt expenses. Satyashodhak Samaj was founded with the purpose to give education to the lower castes, scheduled caste, and scheduled tribes and making them aware of the exploiting tradition of society. They were against child marriage and supported widow remarriages. They had no children of their own but adopted a child of a Brahmin widow, educating him and arranging an inter-caste marriage for him. The couple also set up 'Balyata Pratibandak Gruha', a childcare centre for the protection of pregnant widows and rape victims. Urging women to break free of caste barriers, Savitribai encouraged them to sit together at her meetings. Savitribai Phule published her first collection of poems, called Kavya Phule ('Poetry's Blossoms'), at the age of 23 in 1854. She published Bavan Kashi Subodh Ratnakar ('The Ocean of Pure Gems'), in 1892.
Rani Velu Nachiyar	<p>Context: Recently, the Prime Minister of India has paid tributes to Rani Velu Nachiyar on her birth anniversary.</p> <p>About QUEEN VELU NACHIAR (3 January 1730 – 25 December 1796):</p> <ul style="list-style-type: none"> She was the first queen to fight against the British colonial power in India. She is known by Tamils as Veeramangai. She was the princess of Ramanathapuram and the only child of Raja Chellamuthu Vijayaragunatha Sethupathy and Rani Sakandhimuthal of the Ramnad kingdom. She was trained in war to match weapons usage, martial arts like Valari, Silambam (fighting using a stick), horse riding, and archery. She was a scholar in many languages and she had proficiency with languages like French, English and Urdu. She married the king of Sivagangai, with whom she had a daughter.

Makar Sankranti and Lohri

About: Lohri is celebrated on the last day of Paush month (12-13 January) In Punjab. Generally, after Lohri farmers start cutting their winter crops.

About Makar Sankranti:

- Makar Sankranti is a festival day in the Hindu calendar, in reference to the deity Surya (sun).
- Makar Sankranti is observed according to solar cycles.
- It is held normally on the 14th of January, or a day before or after.
- In certain regions celebrations can go on for even four days and vary a lot in the rituals.
- It marks the – first day of sun’s transit into the Makara (Capricorn), marking the end of the month with the winter solstice and the start of longer days.
- It is also celebrated as a harvest Festival.

Different names of the same festival

- Makar Sankranti – Odisha, Maharashtra-Goa, Andhra-Telangana, Kerala and most of north India
- Paush Parbon – Bengal
- Pongal – Tamil Nadu
 - Pongal is celebrated with the distribution of new crop “Shankarai Pongal” which is basically rice cooked in milk and jiggery distributed as a Prasadam.
- Bhogali Bihu – Assam
 - The farmers of Assam celebrate and cherish the efforts of cultivation. It marks the beginning of Assamese New Year. Assamese celebrate Bihu thrice a year, which signify the distinct cycles of farming – Bhogali/Magh Bihu (January), Bohag/Rongali Bihu (April), and Kongali Bihu (October).
- Lohri – Punjab and Jammu
- Maghi – Haryana and Himachal
- Khichdi Parwa – parts of Bihar, Jharkhand and Uttar Pradesh



Purana Qila

In News: Archaeological Survey of India, ASI is all set to begin excavation at Delhi’s Purana Qila again – third time after excavations in the year 2013-14 and 2017-18.

Purana Qila:

- Located in South Eastern part of New Delhi
- Purana Qila, the **16th-century fort**, was built by **Sher Shah Suri** and second Mughal emperor **Humayun**. The fort is standing on a site with thousands of years of history.
- Identified as **ancient settlement of Indraprastha**, a continuous habitation of **2500** years at Purana Qila was established in earlier excavations.



	<ul style="list-style-type: none"> • Painted grey ware, belonging to 900 BC, an earthen pottery sequence from Maurya to Shunga, Kushana, Gupta, Rajput, Sultanates, and Mughal periods. • Excavated Artefacts such as sickles, parers, terracotta toys, kiln-burnt bricks, beads, terracotta figurines, seals and dealings excavated. • Historian Alexander Cunningham identified the fort with that of Indraprastha • A fortification wall about 30 metre long was also found. • all features that are reminiscent of Rajasthani architecture as seen in the North and South Gates, and which were amply repeated in future Mughal architecture.
<p>Ahom Burial Mounds in Assam</p>	<p>Context: Recently, the Union Government has decided to nominate Assam's Charaideo Maidams for the UNESCO World Heritage Centre.</p> <p>Charaideo Maidams:</p> <ul style="list-style-type: none"> • Assam's Charaideo Maidams are the Ahom equivalent of the ancient Egyptian pyramids. • The maidams represent the late medieval (13th-19th century CE) mound burial tradition of the Tai Ahom community in Assam. <div data-bbox="300 835 660 1111" data-label="Image"> </div> <ul style="list-style-type: none"> • The Charaideo Maidams enshrine the mortal remains of the members of the Ahom royalty, who used to be buried with their paraphernalia. • Out of 386 Maidams or Moidams explored so far, 90 royal burials at Charaideo are the best preserved, representative of and the most complete examples of mound burial tradition of the Ahom's. • After the 18th century, the Ahom rulers adopted the Hindu method of cremation and began entombing the cremated bones and ashes in a Maidam at Charaideo. <p>Significance:</p> <ul style="list-style-type: none"> • There is currently no World Heritage Site in the category of cultural heritage in the northeast. • The nomination of the Charaideo Maidams has attained significance at a time when the country is celebrating the 400th birth anniversary of Lachit Barphukan. <div data-bbox="1050 1305 1469 1581" data-label="Image"> </div> <p>Ahom Kingdom:</p> <ul style="list-style-type: none"> • The Ahom dynasty was founded by Chao Lung Siu-Ka-Pha in 1253. • The Ahom rule lasted for about 600 years until the British annexed Assam in 1826. • Charaideo, more than 400 km east of Guwahati, was the first capital of the Ahom dynasty. <p>About Lachit Borphukan</p> <ul style="list-style-type: none"> • Born: on November 24, 1622 in Charaideo, the first capital of the Ahom kings. • Excelled in the art of Guerrilla Warfare. • Led two battles against an alien Mughal army. <p>Battle of Alaboi:</p> <ul style="list-style-type: none"> • Fought on August 5, 1669 in the Alaboi Hills near Dadara in North Guwahati.

- Aurangzeb had ordered the invasion in 1669 under **his ally Rajput Raja Ram Singh I who led a combined Mughal and Rajput army.**
- Borphukan engaged in guerrilla warfare, assaulting the invaders and then falling back until **Ram Singh I** unleashed his entire forces on the Ahom's, defeating them in the **Battle of Alaboi.**

Naval battle in Saraighat in 1671:

- Lachit Borphukon's valorous leadership led to the **decisive defeat of the Mughals.**
- According to historical accounts, Lachit is said to have tricked the Mughals by feigning an attack in front.
- As the fleet advanced on the river Brahmaputra, the main Ahom fleet attacked from behind, sealing a victory for the locals.

Puri Jagannath Temple

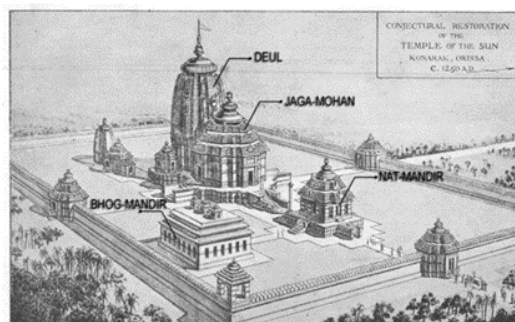
Context: Odisha Governor has backed the entry of foreign nationals inside the world-famous Jagannath Temple in Puri, wading into a debate that has lasted for decades and periodically triggered controversy.

About Puro Jagannath Temple:

- The Shree Jagannath Temple of Puri is an important **Hindu temple dedicated to Lord Jagannath, a form of Vishnu, in Puri in the state of Odisha on the eastern coast of India.**
- The present temple was rebuilt from the 10th century onwards, on the site of an earlier temple, and begun by **King Anantavarman Chodaganga Deva, first of the Eastern Ganga dynasty.**
- The Puri temple is famous for its **Annual Ratha yatra, or chariot festival**, in which the three principal deities are pulled on huge and elaborately decorated temple cars.
 - These gave their name to the **English term Juggernaut.**
- Unlike the stone and metal icons found in most Hindu temples, the image of Jagannath is made of wood and is **ceremoniously replaced every twelve or nineteen years by an exact replica.**

Architecture of Jagannath temple:

- The temple is built in the **Kalinga style of architecture**, with the **Pancharatha (Five chariots) type consisting of two anurathas, two konakas and one ratha.**
- Jagannath temple is a **pancharatha with well-developed pagas.**
- **'Gajasimhas' (elephant lions)** carved in recesses of the pagas, the **'Jhampasimhas' (Jumping lions)** are also placed properly.
- The perfect pancharatha temple developed into a **Nagara-rekha temple.**
- The temple is built on an elevated platform, as compared to Lingaraja temple and other temples belonging to this type.



	<ul style="list-style-type: none"> This is the first temple in the history of Kalingaan temple architecture where all the chambers like Jagamohana, Bhogamandapa and Natyamandapa were built along with the main temple. There are miniature shrines on the three outer sides of the main temple.
Buddhist monastery complex at Bharatpur of Bengal	<p>Context: In the recent excavations, the Structural Complex of the Buddhist Monastery was found in the continuation of large Stupa, Black and Red ware pottery, and Sculptures discovered from excavation done 50 years ago at the same site in West Bengal.</p> <p>About Buddhist Monastery:</p> <ul style="list-style-type: none"> A monastery is a community of men or women (monks or nuns), who have chosen to withdraw from society, forming a new community devoted to religious practice. Stupa, vihara and chaitya are part of Buddhist and Jaina monastic complexes but the largest number belongs to the Buddhist religion. <p>Significance of the excavations:</p> <ul style="list-style-type: none"> The site was initially excavated fifty years ago between 1972 and 1975 when archaeologists from ASI found a Buddhist Stupa at the site. Excavations can help in finding the spread of Buddhism in the South West Bengal region. The discovery is also significant since black and red ware pottery from the chalcolithic age makes the village settlement on river Damodar possible. The stupa found is large compared to stupas found from other Buddhist sites in the state like Karnasubarna in Murshidabad, Moghalamari in Paschim Medinipur, and Jagjivanpur in Malda where smaller votive stupas were found. <p>Viharas:</p> <ul style="list-style-type: none"> It was the ancient Indian term for a Buddhist monastery. Originally, viharas were dwelling places used by wandering monks during the rainy season. Life in “Viharas” was codified early on. It is the object of a part of the Pali canon, the Vinaya Pitaka or “basket of monastic discipline.” Typical large sites such as the Ajanta Caves, Aurangabad Caves, Karli Caves, and Kanheri Caves contain several viharas. A rock-cut viharas at Ellora is an example of vihara. <p>Chaityas:</p> <ul style="list-style-type: none"> It refers to a shrine, sanctuary, temple or prayer hall in Indian religions. Most early examples of chaitya that survive are Indian rock-cut architecture The largest Chaitya-Griha among all Buddhist monuments in India is the Karle caves. Chaityas were carved either as rectangular halls or apsidal vault-roof or apsidal vault pillarless halls.
Etikoppaka Wooden Toy Craft	<p>Context: The Union government choosing to confer Padma Shri on him in the art category is an honour to the Etikoppaka wooden toy craft, and it will go a long way in promoting the art.</p>

About Etikoppaka Wooden Toy Craft:

- Etikoppaka is a picturesque village on the banks of Varaha River in Visakhapatnam district of Andhra Pradesh.
- The success for the Etikoppaka toys is thought to have come from the **Rajas of Vizianagaram**, who migrated to this region around the same time and acted as catalysts as landlords.
- Etikoppaka Toys have obtained their GI tag under **Handicrafts category in the state of Andhra Pradesh**.
- Agricultural, natural or manufactured goods are registered as **Geographical Indications (GI)** by the **Geographical Indications Registry** as per the provisions of the **Geographical Indications of Goods (Registration & Protection) Act, 1999**.



GEOGRAPHY



Schengen Zone

Context: Recently, Croatia adopted the euro currency and enter Europe's passport-free Schengen zone after nearly a decade after joining the European Union.

About Schengen Zone:

- Schengen Area signifies a zone where **27 European countries (now 28)**, abolished their internal borders, for the free and unrestricted movement of people
- Schengen Area covers most of the EU countries, **including Ireland** and the countries that are soon to be part of the Schengen Area: **Romania, Bulgaria, and Cyprus**.
- **Iceland, Norway, Switzerland and Lichtenstein** are associate members of the Schengen Area **but are not members of the EU**.
 - They are part of the EFTA and implement the Schengen acquis through specific agreements related to the **Schengen agreement**.
- **Monaco, San Marino, and Vatican City** have opened their borders with, but are not members of the visa-free zone.
- There are **three more EU members**, that have not joined the Schengen zone: **Romania, Bulgaria, and Cyprus – that are seeking to join soon**.



Lachin Corridor

Context: Recently, United Nations International Children's Emergency Fund (UNICEF) has issued a statement warning about deteriorating humanitarian situation in Nagorno-Karabakh due to closure of Lachin Corridor.

About Lachin Corridor:

- It is a road that links **Armenia and the enclave of Nagorno-Karabakh**.
- It has been **blocked by Azerbaijani protesters** related to the issue of illegal mining of natural resources in Nagorno-Karabakh.
- It supports movement of people and essential goods like- food, fuel, and medical supplies in or out of the enclave.



Horn of Africa

Context: According to a UNICEF recent publication, nearly 70 per cent of the Intergovernmental Authority on Development (IGAD) region comprise arid and semi-arid lands prone to recurrent droughts in the horn of Africa.

About Horn of Africa:



- The Horn of Africa (alternatively Northeast Africa, and sometimes Somali Peninsula) is a peninsula of East Africa that juts for hundreds of kilometers into the Arabian Sea, and lies along the southern side of the Gulf of Aden.
- It is the easternmost projection of the African continent.

- The term also refers to the greater region containing the countries of **Djibouti, Ethiopia, Eritrea and Somalia**. As such, it covers approximately 2,000,000 km² and is inhabited by about 86.5 million people.
- **Sudan and Kenya** are sometimes included as well.
- The Horn of Africa is a **UNESCO Biodiversity Hotspot** and one of the two entirely arid ones.
 - However the Horn of Africa suffers largely from overgrazing and **only 5% of its original habitat still remains**.

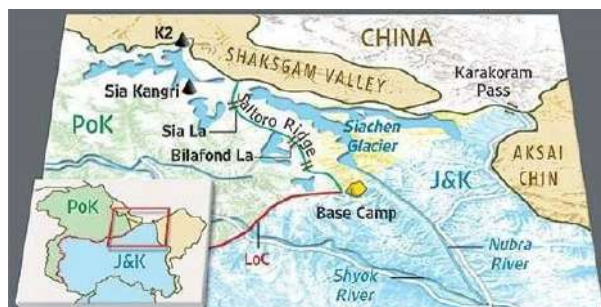


Siachen Glacier

In News: The Prime Minister has applauded as **Capt. Shiva Chauhan of Fire and Fury Sappers** became the first woman officer to be operationally deployed in **Kumar Post**, post completion of arduous training, at the highest battlefield of the world **Siachen**.

The Siachen glacier:

- India occupied Siachen glacier under **Operation Meghdoot in 1984**.
- Siachen Glacier, piedmont glacier located in the **Karakoram Range**.
- It lies in the heavily glaciated Himalayan region known as the **"Third Pole,"** because mountain glaciers in this region contain more fresh water than is found anywhere else on Earth except for the polar ice caps.
- The Siachen Glacier lies between the **Saltoro Ridge**, a subrange of the Karakorams, to the west and the main Karakoram Range to the east.
- It is **75 km (47 miles)** long, which makes it the **second longest nonpolar glacier** in the world, after **Fedchenko Glacier in Tajikistan**.
- The **Siachen Glacier is positioned** from northwest to southeast.
- On its left flank are three **tributary glaciers: Teram Shehr, North Terong, and South Terong**.
- On its right flank are tributary glaciers: **Zingrulma, Gyongla, Lolofond**.
- **Nubra River** originates from Siachen glacier.
- The name Siachen refers to a **land with an abundance of roses**.



Chilka lake

Context: Chilka lake in Odisha, Asia's biggest brackish water lagoon, saw an increase in the number of migratory birds this winter compared to the previous year.

About Chilka lake:

- Chilka Lake is **Asia's biggest inland saltwater lagoon** situated near **Satapada in Odisha**.

	<ul style="list-style-type: none"> Located at the mouth of the Daya River, Chilka Lake is the largest coastal lagoon in India. It is a Ramsar site. It is largest wintering ground for migratory birds in the Indian Subcontinent. It is home to one of the largest breeding site for Flamingos. It is a UNESCO World heritage site Second largest saltwater lagoon in the world after the New Caledonian barrier reef in New Caledonia. <p>Top Attractions in Chilika</p> <p>Nalabana bird sanctuary</p> <ul style="list-style-type: none"> Situated in the heart of Chilika, Nalabana Island deserves a special mention since it is a prime refuge point for thousands of resident and migratory birds. It got the status of a sanctuary in 1987 and specially acts as a treat for the bird-watchers during winter season. <p>Kalijai Temple</p> <ul style="list-style-type: none"> Island of Goddess Kalijai is the most frequent spot for tourists. The island is famous as a centre of religious worship due to the temple of Kalijai. There is a story behind the place which is centred around an innocent girl called “Kalijai” who got married and was going by boat along with her in-laws through this lake. <p>Satapada</p> <ul style="list-style-type: none"> Satapada is the ultimate place to watch Irrawaddy dolphins. <p>Beacon Island</p> <ul style="list-style-type: none"> This island is an architectural marvel with a conical pillar and a small room constructed on the submerged mass of rock in the Rambha bay near Ghantasila hill. The water spread around the Beacon Island is very charming, surrounded by the Eastern Ghat.
Land subsidence	<p>Context: The exact reason behind Joshimath land subsidence is still unknown but experts cite unplanned construction, over-population, obstruction of the natural flow of water, and hydel power activities as possible causes.</p> <p>About Land Subsidence:</p> <ul style="list-style-type: none"> According to the National Oceanic and Atmospheric Administration (NOAA), subsidence is the sinking of the ground because of underground material movement. The subsidence in Joshimath might have been triggered by the reactivation of a geographic fault — <ul style="list-style-type: none"> defined as a fracture or zone of fractures between two blocks of rock — where the Indian Plate has pushed under the Eurasian Plate along the Himalayas.
Aravalli Safari Park	<p>Context: Aravalli safari park project proposed by Haryana Chief Minister which will affect the ecosystem of Aravallis region.</p> <p>About Aravalli Mountain range:</p>

- It is located in the north-western part of India.
- It is one of the **oldest fold mountain systems** in the world.
- It is divided into two sections:
 - **The Sambhar-Sirohi ranges:** It is taller and includes Guru Peak on Mount Abu (the highest peak in the Aravalli Range).
 - **The Sambhar-Khetri ranges:** It consisting of three ridges that are discontinuous.
- Several rivers are originated from Aravalli range such as **the Banas, Luni, Sakhi, and Sabarma**
- It's passes through states such as **Gujarat, Rajasthan, Haryana and Delhi.**
- Its **average height is from 600 to 900 m.**



Lakshadweep Islands

In News: In Lakshadweep, pomp and gaiety marked the Republic Day celebrations in the ten inhabited islands in the archipelago, where people participated in large numbers.

Lakshadweep Islands

- **India's smallest Union Territory** Lakshadweep is an archipelago consisting of **36 islands** with an area of 32 sq km
- It is known for its exotic and sun-kissed beaches and lush green landscape.
- The name Lakshadweep in Malayalam and Sanskrit means 'a hundred thousand islands'.
- It is a **unit-district Union Territory** and the islands were constituted a union territory in 1956.
- It comprises of 12 atolls, three **reefs**, five submerged banks and ten inhabited islands.
- The principal islands in the territory are **Minicoy** and those in the **Amindivi** group.
- The easternmost island lies about 185 miles (300 km) from the coast of the state of Kerala. **Ten of the islands are inhabited.**
- Capital – **Kavaratti**



Climate

- Lakshadweep has a tropical climate and it has an average temperature of 27° C – 32° C.
- April and May are the hottest. Generally the climate is humid warm and pleasant.
- From June to October the South West Monsoon is active with an average rainfall of 10-40 mm.

Fauna & Flora

- Includes **Banana**, Vazha, (Musaparadisiaca), Colocassia, Chambru (Colocassia antiquarum) Drumstic moringakkai, wild almond
- **Coconut, Thenga** – only crop of economic importance in Lakshadweep.
- **Sea grass** – **Thalassia hemprichin** and **Cymodocea isoetifolia**. They prevent sea erosion and movement of the beach sediments.

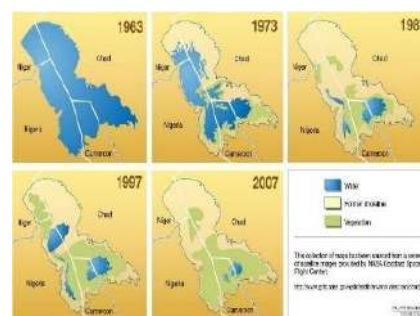
- **Molluscan forms** are also important from the economic point of the islands.
- Culture & Heritage**
- **Kolkali and Parichakali** are the two popular folk art forms in the Territory.
 - They are an integral part of the cultural milieu except in Minicoy where **“LAVA”** is the most popular dance form.
 - Some of the folk dances have a resemblance with those in North Eastern India.
 - For **marriages “OPPANA”** is a common feature, a song sung by a lead singer and followed by a group of women.

Lake Chad

Context: A report by Refugees International, a humanitarian organisation has highlighted the dangerous link between climate change and conflict in countries like Cameroon, Chad, Niger and Nigeria in the Lake Chad Basin.

About Lake Chad:

- The Lake Chad is a vast **area of fresh water** located in the middle of sand dunes which covers territories in 4 countries: **Nigeria, Cameroon, Niger and Chad.**
- It is an **endorheic lake** fed mainly by the Logone Chari and Komadougou watercourses.
- Receding waters in dry season expose wide **floodplains on the banks of the lake.**



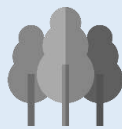
- They shelter water plants such as **papyrus and spirulina** but also numerous animal species such as the **migratory birds, which use these plains as resting areas.**
- The **Chad Basin National Park (Lake Chad Nigeria Section)** is located between **Borno and Yobe states in the extreme north-eastern corner of Nigeria.**
- The Park is generally described as being in the **conventional basin of the famous but rapidly shrinking Lake Chad.**
- The Chad Basin remains the **only existing stronghold of Giraffe and Ostrich in Nigeria.**
- The Chad Basin National Park shares the same ecosystem with the **Waza National Park in the Republic of Cameroon to the east.**
- Its Wetlands and Oases are very important in the **mitigation of the desertification process in north-eastern Nigeria** and the **overall conservation management efforts of the Chad Basin as a whole.**
- The natural values are almost identical to those of the Okavango Delta, **the Lakes of Ounianga and the Kenya Lake System in the Great Rift Valley in Africa;** but they are also comparable to those of the **West Lake Cultural Landscape of Hangzhou in China** and the **Ahwar of Southern Iraq.**

Low basalt plateau discovered in Western Ghats

In News: Researchers from Pune have discovered a low-level basalt plateau, an isolated flat-topped steep hill, in the Western Ghats in Maharashtra recorded 76 plant species belonging to 24 families

Kas Plateau:

- Locally called as '**Kas Pathar**' or '**Plateau of Flowers**'.
- A **UNESCO world natural heritage site** in Maharashtra, is a **lateritic plateau** (composed of mainly laterite rock, rich in iron and aluminium content) that hosts many endemic wild flowering plants.
- **Location:** 25 Km away from Satara District H.Q. & 20 Km away from Northern part of Koyana Sanctuary.
- The major portion of the plateau is Reserve Forest.
- Kas plateau is listed under the Protection Working Circle.
- Kas lake (built 100 years ago) is a perennial source of Water supply for western part of Satara city by gravity.



ENVIRONMENT



Black Carbon and black carbon aerosols

Context: A recent study conducted on Tibetan plateau showed that increase in South Asian black Carbon aerosols is increasing loss of glaciers from Tibetan Plateau.

About Black Carbon:

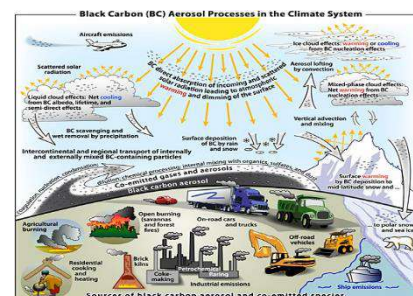
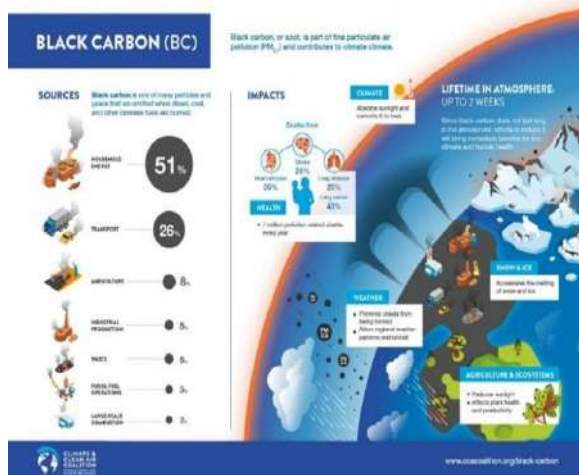
- Black carbon is the sooty black material emitted from gas and diesel engines, coal-fired power plants, and other sources that burn fossil fuel.
- It comprises a significant portion of particulate matter or PM, which is an air pollutant.

Impact of black carbon:

- Climate impacts: It has a warming impact that is 460-1,500 times stronger than CO₂ on climate.
- It converts incoming solar radiation to heat.
- It influences cloud formation and impacts regional circulation and rainfall patterns.
- **Health impacts-** With size of 2.5 micrometres (PM_{2.5}) or smaller, it can penetrate into lungs and facilitate transport of toxic compounds into the bloodstream.
- PM_{2.5} can cause premature death and cause heart and lung disease, strokes, heart attacks, chronic respiratory disease like bronchitis, asthma and pneumonia.
- **Impacts on ecosystem and vegetation-** if deposited on plant leaves it will decrease its capability of photosynthesis and thus reduce food production.
- It can reduce sunlight that reaches the earth and modify rainfall patterns.
- Black carbon deposition in snow reduces the albedo of surfaces which accelerate melting of glaciers and snow cover and changes hydrological process and water resources in the region.
- Albedo is ability to reflect back Sun's radiations.
- Black carbon aerosols in South Asia heat up the middle and upper atmosphere and increases North South temperature gradient.
- This increases convective activity in South Asia which causes convergence of water vapour in South Asia.
- Black carbon also increases the number of cloud condensation nuclei in the atmosphere.

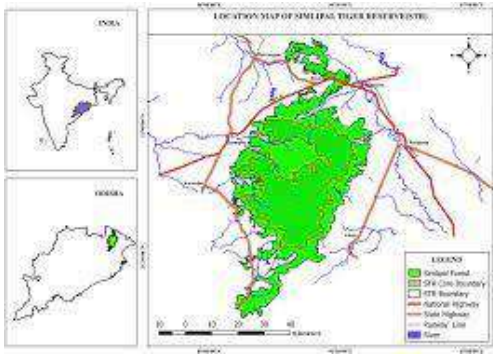
About Black Carbon aerosols:


- It is produced by the incomplete combustion of fossil fuels and biomass.
- It has strong absorption of solar radiation like-visible and infrared radiation.
- It is also called soot and is part of particulate matter above PM_{2.5}.



	<ul style="list-style-type: none"> • Thus, it contributes to pollution and Global warming. • It can increase the temperature of atmosphere and darken surfaces, specifically snow and ice. • It has short lifetime in atmosphere and gets removed in 1-2 weeks, so its impacts tend to be more regional rather than global.
<p>Green Urban Oasis Programme</p>	<p>Context: Recently, Food and Agriculture Organization of the United Nations (FAO) launched report on Urban forestry and urban greening in drylands.</p> <p>Key findings of the report:</p> <ul style="list-style-type: none"> • 35% of the world's largest cities are built in the world's drylands. • It includes Cairo, Mexico City and New Delhi. • They are home to 2 billion people, 90% of them in developing countries. <p>About Green Urban Oases Programme:</p> <ul style="list-style-type: none"> • It was Launched in 2021 by FAO. • It contributes to the FAO Green Cities initiative, which was launched in 2020. • It aims to improve the resilience of dryland cities by tackling climate, health, food and economic challenges. <ul style="list-style-type: none"> ◦ To transform dryland cities into 'green urban oases' by strengthening their overall resilience to climatic, health, food and economic crises for the improved health and well-being of urban communities. • It focuses on developing policy, technical capacity and outlines several pathways for transforming urban spaces by planting trees. • Several initiatives including the Great Green Wall in Africa and the Three-North Shelter Forest Programme in China have been put in place to support the implementation of climate adaptation and mitigation strategies in dryland rural areas.
<p>Silent Valley National Park</p>	<p>In News: A bird survey conducted at the Silent Valley National Park identified 141 species, of which 17 were new. So far, 175 species of birds have been spotted in Silent Valley.</p> <p>Silent valley national park</p> <ul style="list-style-type: none"> • Silent Valley National Park is a national park in Kerala, India. • It is located in the Nilgiri hills. • Mukurthi peak, the fifth-highest peak in South India, and Anginda peak are also located in its vicinity. • Bhavani River, a tributary of Kaveri River, and Kunthipuzha River, a tributary of Bharathappuzha river, originate in the vicinity of Silent Valley. • The Kadalundi River has also its origin in Silent Valley. • Lion tailed macaques is the flagship species of the Park.



	<ul style="list-style-type: none"> The indigenous tribal groups that live within park boundaries include Irulas, Kurumbas, Mudugas and Kattunaikkars, the ethnic heritage of these communities is well protected. Karimpuzha Wildlife Sanctuary, New Amarambalam Reserved Forest, and Nedumkayam Rainforest in Nilambur Taluk of Malappuram district, Attappadi Reserved Forest in Mannarkkad Taluk of Palakkad district, and Mukurthi National Park of Nilgiris district, are located around Silent Valley National Park.
Sustainable Aquaculture In Mangrove Ecosystem (SAIME)	<p>In News: A new initiative of sustainable shrimp cultivation provides hope for mangrove restoration in Sundarbans.</p> <p>About SAIME:</p> <ul style="list-style-type: none"> The community-based initiative of sustainable shrimp cultivation is being conceived by NEWS and Global Nature Fund (GNF), Naturland Bangladesh Environment and Development Society (BEDS). Farmers have taken up cultivation of shrimp in West Bengal including indigenous varieties of shrimps such as black tiger shrimp (<i>P. monodon</i>) and giant freshwater prawn (<i>M. rosenbergii</i>). The Sundarbans forest is about 10,000 sq. km across India and Bangladesh, of which 40% lies in India.
Deepor Beel	<p>Context: Deepor Beel, Assam's only Ramsar site, which is troubled by development projects and urban waste, has 30 more waterfowl species than the total counted in 2022, a bird survey has found.</p> <p>About Deepor Beel:</p> <ul style="list-style-type: none"> Deepor Beel (Beel means wetland or large aquatic body in Assamese) is located Southwest of Guwahati. It is considered one of the largest and important riverine wetlands in the Brahmaputra Valley of lower Assam, India. Due to the richness of avian fauna, it has been selected as one of the Important Bird Area (IBA) sites by Birdlife International. It was designated a Ramsar site in 2002 for sustaining a range of aquatic life forms besides 219 species of birds. A Ramsar Site is a wetland designated to be of international importance under the Convention on Wetlands, held at the Iranian city of Ramsar in February 1971.
Simlipal National Park	<p>In News: Simlipal National Park has turned out to be the hunting ground for animal poachers over the last few years.</p> <p>Simlipal National Park</p> <ul style="list-style-type: none"> Located in northern part of Odisha's Mayurbhanj district Simlipal derives its name from 'Simul' (Silk Cotton) tree It is a national park and a Tiger Reserve The park is surrounded by high plateaus and hills, the highest peak being the twin peaks of Khairiburu and Meghashini. 

	<ul style="list-style-type: none"> At least twelve rivers cut across the plain area, all of which drain into the Bay of Bengal – Burhabalanga, Palpala Bandan, Salandi, Kahairi and Deo. Prominent tribes – Kolha, Santhala, Bhumija, Bhatudi, Gondas, Khadia, Mankadia and Sahara. The vegetation is a mix of deciduous with some semi-evergreen forests Sal is the dominant tree species <p>Biodiversity in the park:</p> <ul style="list-style-type: none"> The park is known for the tiger, elephant and hill mynah. It holds the highest tiger population in the state of Odisha. Grey hornbill, Indian pied hornbill and Malabar pied hornbill are also found here. The Mugger Management Programme at Rama tirtha has helped the mugger crocodile to flourish on the banks of the Khairi and Deo Rivers.
<p>Kelp forests</p>	<p>In News: Kelp populations at equatorward-range edges are particularly vulnerable to climate change as these locations are undergoing warming.</p> <p>Kelp forests</p> <ul style="list-style-type: none"> Kelp are large brown algae These are underwater ecosystems found in cool, nutrient rich, shallow waters that are close to the shore Many organisms use the thick blades as a safe shelter for their young from predators or even rough storms. Sea urchins can destroy entire kelp forests. Sea otters play a key role in stabilizing sea urchin populations so that kelp forests may thrive. Ecklonia radiata is the dominant and most widely distributed Laminarian kelp in the southern hemisphere Kelp can sometimes persist at lower latitudes, aided by cool water upwelling or in deep-water refugia where they are protected by thermocline. Thermocline is the transition layer between the warmer mixed water at the surface and the cooler deep water below). <p>Significance:</p> <ul style="list-style-type: none"> Kelp forests provide food and shelter for thousands of species such as seals, sea lions, whales, sea otters, gulls, terns, snowy egrets, great blue herons, cormorants, and shore birds. Kelp forests provide underwater habitats to hundreds of species of invertebrates, fishes, and other algae and have great ecological and economic value. Loss of kelp forests will also lead to a decline of the unique biodiversity that they support There is high evolutionary diversity in the low-latitudes as many marine organisms were only able to persist within ice-free refuge areas at lower latitudes during the Ice Age Giant kelp is harvested from kelp forests and used as a binding agent in products like ice cream, cereal, ranch dressing, yogurt, toothpaste, lotion and more. <div data-bbox="1129 875 1487 1140"> <p>Fun facts about kelp!</p> <ul style="list-style-type: none"> Kelp forests are the largest growing plants in the sea. They can reach lengths up to 150 ft. and grow more than 2 feet in a day. Humans use a chemical found in kelp called algin, in hundreds of products such as lotes, ink, toothpaste, ice cream, and soap. Kelp forests can die when the water becomes warmer than 22 degrees.  </div>

Bhoj Wetland

In News: The National Green Tribunal has directed the **Central Pollution Control Board (CPCB)** and **Madhya Pradesh Pollution Control Board (MPPCB)** to periodically monitor the activities of a cruise vessel polluting the Bhoj wetland in Bhopal, MP.

Bhoj Wetland:

- It is located around Bhopal in Madhya Pradesh
- The wetland is also a **Ramsar site** with international importance.
- It has two lakes, **Upper lake, also called Bhojtal and Lower Lake or Chhota Talaab.**
- **Paramara Raja Bhoj** (1005-1055 CE), the benefactor-ruler of Malwa, after whom the state capital Bhopal is also named, had the lake built by raising an earthen dam across the **Kolans**.
- The **Bhoj wetland is among the most accessible** Ramsar site, with a road going all around the twin lakes.

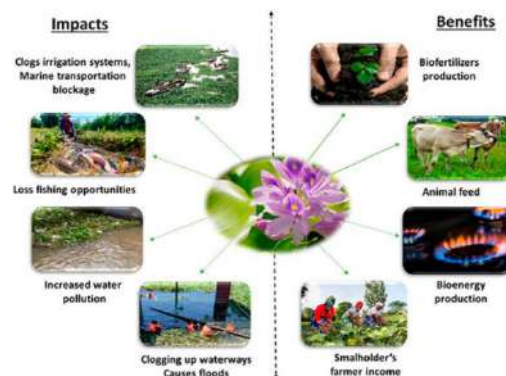


Water Hyacinth

In News: An artificial lake in Madhya Pradesh's Shivpuri district has virtually disappeared under a thick layer of an **invasive aquatic plant**, threatening the biodiversity of the water body.

About Water hyacinth:


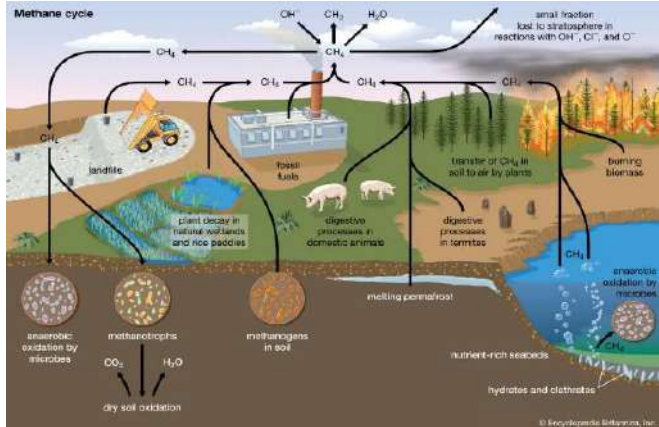
- **Water hyacinth (Pontederia crassipes)** is an invasive species native to South Africa.
- While the plant has **some uses too**, when it **covers the entire surface of a water body, it becomes a threat to aquatic biodiversity.**
- **Macrophytes** like water hyacinth can't be outrightly placed in a harmful or useful category.
- Water hyacinth acts as a **water purifier** by removing heavy metals from water when present in small quantities.
- However, the plant is a **prolific spreader** and when it covers the entire surface of a water body, it does **not allow sunlight to penetrate** the water and also starts **depleting oxygen.**
- This leads to death of aquatic animals and plants, which in turn decompose and further reduce oxygen levels.
- The presence of water hyacinth **indicates** that there are **high nitrogen levels** in the water.
- It also indicates a **lack of effective competing factors** to prevent its growth.



The Sankhya Sagar;

- It was declared a **Ramsar site in July 2022.**
- It helps to maintain the ecological balance of the **Madhav National Park.**

	<ul style="list-style-type: none"> The lake is also home to marsh crocodiles aka 'Mugger' (<i>Crocodylus palustris</i>) is a Schedule I reptilian species protected under the Indian Wild Life (Protection) Act, 1972. The Maniyar river connects the Sankhya Sagar to another lake, Jadhav Sagar, which passes through the national park.
<p>Asiatic Golden Cat</p>	<p>Context: Recently melanistic Asian golden cat captured through camera traps in West Bengal's Buxa Tiger Reserve (BTR).</p> <p>About Asiatic Golden Cat:</p> <ul style="list-style-type: none"> The Asian golden cat (<i>Catopuma temminckii</i>) is a medium-sized wild cat native to the Northeastern Indian subcontinent, Southeast Asia and China. They are diurnal and crepuscular. Conservation Status: <ul style="list-style-type: none"> IUCN: Near threatened Wildlife Protection Act, 1972: Schedule I <p>About Buxa Tiger Reserve:</p> <ul style="list-style-type: none"> Buxa Tiger Reserve (BTR) lies in Alipurduar sub-division of Jalpaiguri district of West Bengal. Its northern boundary runs along the international border with Bhutan. The Sinchula hill range lies all along the northern side of BTR and the Eastern boundary touches that of the Assam State. It is the eastern most extension of extreme bio-diverse North-East India and represents highly endemic Indo-Malayan region. The fragile "Terai Eco-System" constitutes a part of this Reserve. The Phipsu Wildlife Sanctuary of Bhutan is contiguous to North of BTR. Manas National Park lies on east of BTR. <ul style="list-style-type: none"> BTR, thus, serves as international corridor for elephant migration between India and Bhutan. <div data-bbox="1129 600 1481 824" data-label="Image"> </div> <div data-bbox="1061 952 1476 1249" data-label="Image"> </div>
<p>Living Root bridges of Meghalaya</p>	<p>Context: A farmer takes forward the State's traditional practice of building root bridges and connects two areas across Umkar river in Cherrapunji.</p> <p>About Root bridges:</p> <ul style="list-style-type: none"> Locally known as 'jingkieng jri' the living Root bridges are one of Meghalaya's most beautiful tangible heritage sites. These sites have recently been added to the tentative UNESCO world heritage site list. Some of the most popular of these living root bridges are in Nongriat, Cherrapunji, Nongbareh and other nearby locations. These are naturally built bridges mainly built by firstly planting two rubber trees of the Ficus elastica on either side of a river. <div data-bbox="1074 1731 1481 1955" data-label="Image"> </div>

	<ul style="list-style-type: none"> It is a type of simple suspension bridge formed by the method of tree shaping to form living plant roots across a stream or river. These are very common in the southern part of Meghalaya grown by the Khasi and Jaintia tribes These bridges can also be found in the state of Nagaland. The earliest written record of Cherrapunji's bridges can be found in the 1844 Journal of the Asiatic Society of Bengal.
Yangtze finless porpoise	<p>In News: New research done in the Dongting lake in China that joins the Yangtze river found the cetaceans were pushed out of certain stretches of their habitat due to sand mining.</p> <p>Yangtze finless porpoise:</p> <ul style="list-style-type: none"> IUCN status – critically endangered The Yangtze finless porpoise belongs to the group of animals which also includes dolphins and whales. It is the only freshwater porpoise in the world and breeds just once in 18 months. 
Amrabad Tiger Reserve	<p>About Amrabad Tiger Reserve:</p> <ul style="list-style-type: none"> This Tiger Reserve (ATR) is one of the largest tiger reserves in India over Nagarkurnool and Nalgonda districts of Telangana State Amrabad Tiger Reserve a well-known and well-preserved nature reserve in Nallamala Hills, part of the Eastern Ghats chain. This is the second-largest Tiger Reserve in terms of core area but the sixth-largest tiger reserve. It has a large presence of the Chenchu tribe.
Methane Emissions	<p>Context: Microsoft has invested in an Australian climate technology start-up that aims to curtail the methane emissions of cow burps, according to a report in the BBC.</p> <p>About Methane:</p> <ul style="list-style-type: none"> Methane (CH₄) is a hydrocarbon that is a primary component of natural gas. Methane is also a greenhouse gas (GHG), so its presence in the atmosphere affects the earth's temperature and climate system. Methane (CH₄) is a colourless, odourless and highly flammable gas. Methane is the second most abundant anthropogenic GHG after carbon dioxide (CO₂), accounting for about 20 percent of global emissions. China, the United States, Russia, India, Brazil, Indonesia, Nigeria, and Mexico are estimated to be responsible for nearly half of all anthropogenic methane emissions. Because methane is both a powerful greenhouse gas and short-lived 

compared to carbon dioxide, achieving significant reductions would have a rapid and significant effect on atmospheric warming potential.

Sources of Methane:

- Globally, 50 to 65% of total methane emissions come from the following human-caused activities:
- **Raising livestock:** Ruminants such as cows, sheep, goats, and buffaloes have a special type of digestive system that allows them to break down and digest food that non-ruminant species would be unable to digest.
 - Livestock emissions (from manure and gastroenteric releases) **account for roughly 32 per cent of human-caused methane emissions.**
- Leaks from **natural gas systems**
- **Landfills and waste from homes and businesses**
- **Agriculture is the predominant source.**
- Paddy rice cultivation in which flooded fields prevent oxygen from penetrating the soil, creating ideal conditions for methane-emitting bacteria – accounts for another 8 per cent of human-linked emission.

Consequences of Methane:

- **Potency:** Methane is about 80 times more powerful at warming the atmosphere than carbon dioxide over a 20-year period.
- **Ozone formation:** Methane also contributes to the formation of ground-level ozone a hazardous air pollutant and greenhouse gas.
- **Global warming:** Methane has accounted for roughly 30 per cent of global warming since pre-industrial times and is proliferating faster than at any other time since record keeping began in the 1980s.

Global and Indian Initiatives to tackle Methane Emissions

India Greenhouse Gas Program:

- This Program is an industry-led voluntary framework aiming to help Indian companies monitor progress towards measurement and management of GHG emissions using tools and methodologies from **WRI's (World Resources Institute) GHG Protocol.**

Harit Dhara:

- The Harit Dhara is an **anti-methanogenic feed supplement** prepared from the **Natural Phyto-sources.**
- It is found very effective in **reducing the enteric methane emission** upto 17% to 20% when **incorporated in the livestock feed.**

Methane Alert and Response System:


- UNEP's International Methane Emissions Observatory launched the **Methane Alert and Response System (MARS)** at **COP27**, a new initiative to accelerate implementation of the **Global Methane Pledge by transparently** scaling up global efforts to detect and act on major methane emissions sources.

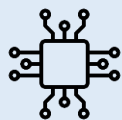
Global Methane Initiative:

- It was **launched in 2004.**
- It is an **international public-private initiative.**
- GMI includes **46 Partner Countries**, which together represent **approximately 75 percent of the world's estimated man-made methane emissions.**

Global Methane Pledge:

- The Global Methane Pledge was launched at **COP26 in November 2021** to catalyse action to reduce methane emissions.

- 
- Led by the **United States and the European Union**, the Pledge now has 111 country participants who together are responsible for **45% of global human-caused methane emissions**.
 - By joining the Pledge, countries commit to work together in order to collectively **reduce methane emissions by at least 30% below 2020 levels by 2030**.



SCIENCE & TECHNOLOGY



Transfats

In News: Five billion people globally are exposed to harmful trans-fat, increasing their heart disease and death risk, according to a new report by the World Health Organization (WHO).

Transfats:

- Trans fats, also called partially hydrogenated oils, are created when hydrogen is added to vegetable oil to make it more solid.
- The sources of trans fat can be (1) Natural or (2) Artificial.
- **Natural trans fats** are also called **ruminant trans fats**, as they are present in small quantities in meat and dairy products obtained from ruminant animals such as cows, sheep and cattle.
- Natural/ruminant trans-fat are not generally considered harmful.
- Industrially produced trans-fat is usually found in packaged foods, baked items, cooking oils and spreads.
- They are considered even less healthy than saturated fats
- They are generally found in: **Bakery products, fried foods re-heated oils etc.**

Immune Imprinting

Context: Over the years, scientists have realised that imprinting acts as a database for the immune system, helping it put up a better response to repeat infections.

About Immune Imprinting:

- Immune imprinting is a **tendency of the body to repeat its immune response based on the first variant it encountered through infection or vaccination** — when it comes across a newer or slightly different variant of the same pathogen.
- The phenomenon was first observed in 1947, when scientists noted that **“People who had previously had flu, and were then vaccinated against the current circulating strain, produced antibodies against the first strain they had encountered”**, according to a report published in the journal Nature.
- **Working :** After our body is exposed to a virus for the first time, it produces memory B cells that circulate in the bloodstream and quickly produce antibodies whenever the same strain of the virus infects again.

Issue associated with Imprinting:

- The problem occurs when a **similar, not identical, variant of the virus is encountered by the body.**
- In such cases, the immune system, rather than generating new B cells, activates memory B cells, which in turn produce antibodies that bind to features found in both the old and new strains, known as **cross-reactive antibodies.**
- Although these cross-reactive antibodies do offer some protection against the new strain, **they aren’t as effective as the ones produced by the B cells when the body first came across the original virus.**

Ways to deal with Immune Imprinting:

- **Nasal vaccines:** Some scientists have said nasal vaccines might be better at preventing infections than injected ones.
 - They believe the mucous membranes would create stronger protection, despite carrying some imprint of past exposure.
- **Spacing vaccine shots:** Researchers are also trying to find if spacing out coronavirus vaccine shots on an annual basis, could help with the problem of imprinting.
- **Pan-sarbecovirus vaccines:** There's also considerable effort directed toward developing what's called pan-sarbecovirus vaccines that will protect against all COVID-causing variants and maybe even protect against other SARS and related viruses.

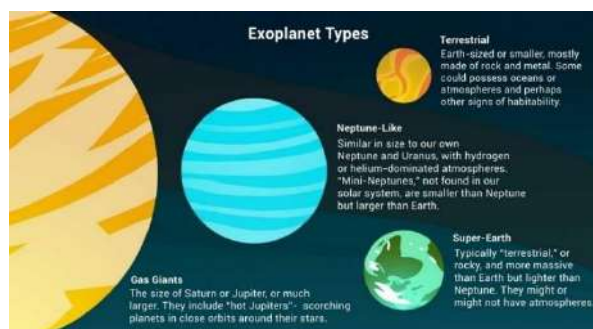
Exoplanets

Context: The National Aeronautics and Space Administration (NASA) recently announced that the James Webb Space Telescope has discovered its first new exoplanet.

- Researchers have labelled the planet as **LHS 475 b**, and it's roughly the same size as Earth.

About Exoplanets:

- An exoplanet is any planet beyond our solar system.
- Most orbit other stars, but free-floating exoplanets, called rogue planets, orbit the galactic centre and are untethered to any star.
- They can be **gas giants bigger than Jupiter or as small and rocky as Earth**.
- They are also known to have different kinds of temperatures — **boiling hot to freezing cold**.
- Scientists rely on indirect methods for discovering exoplanets, such as the transit method, which is measuring the dimming of a star that happens to have a planet pass in front of it.



About red dwarf stars:


- Such types of stars are the most common and smallest in the universe.
- As **they don't radiate much light**, it's very tough to detect them with the naked eye from Earth.
- However, as red dwarfs are dimmer than other stars, it is easier to find exoplanets that surround them.
- Therefore, red dwarfs are a **popular target for planet hunting**.

Shukrayaan I

In News: ISRO had originally hoped to launch Shukrayaan I in mid-2023 but cited the pandemic when it pushed the date to December 2024.

- **Optimal launch windows** from Earth to Venus occur **once around every 19 months**.
- But even more optimal windows, which further reduce the amount of fuel required at liftoff, come around **every eight years**.

	<ul style="list-style-type: none"> Both the U.S. and the European space agencies have Venus missions planned for 2031 — referring to VERITAS and EnVision <p>Shukrayaan I or the Venus mission:</p> <ul style="list-style-type: none"> It will be an orbiter mission i.e. a spacecraft designed to orbit a celestial body without landing on its surface The spaceship, GSLV Mark II will be used to launch the mission with a launch mass of 2,500 kg. Its scientific payloads currently include a high-resolution synthetic aperture radar and a ground-penetrating radar. In the year 2020, scientists announced that they have detected Phosphine (a life-friendly element indicative of possible life on the planet) in the atmosphere of Venus. ‘Shukrayaan-I’ will also bring with it some instruments that will examine infrared, ultraviolet and submillimetre wavelengths to study the claims more deeply.
<p>Local Bubble</p>	<p>In News: Researchers from the Centre for Astrophysics (CfA) Harvard & Smithsonian have generated a 3D magnetic map of the cavity called Local Bubble.</p> <p>Local Bubble:</p> <ul style="list-style-type: none"> It is a 1,000-light-year-wide cavity or a superbubble. Local Bubble is thought to have originated from supernovae roughly 14 million years ago. (Supernova is a cosmic explosion occurring when stars meet their end) Other superbubbles also exist in the Milky Way – Superbubbles are comparable to holes in Swiss cheese – Supernova explosions blow holes in the cheese and new stars form around these holes <p>Significance:</p> <ul style="list-style-type: none"> Superbubbles trigger the formation of new stars and planets and influence the overall shapes of galaxies Star-forming regions occur along the bubble’s surface. <p>About the study:</p> <ul style="list-style-type: none"> Mechanisms powering the formation and expansion of the Local Bubble are not well-understood Further, there is little information on how magnetic fields likely impact the bubble and local star formation. To generate a magnetic map of the Local Bubble, Gaia and Planck were used — space-based observatories launched by the European Space Agency (ESA).
<p>Satyendra Nath Bose</p>	<p>Context: Born on January 1, 1894, Satyendra Nath Bose collaborated with Einstein to develop what we now know as the Bose-Einstein statistics.</p> <p>About Satyendra Nath Bose:</p> <ul style="list-style-type: none"> Satyendra Nath Bose was born on January 1, 1894 in Calcutta. His father Surendranath Bose was employed in the Engineering Department of the East India Railway.

	<ul style="list-style-type: none"> • Satyendra Nath Bose is known for his work in Quantum Physics. • He is famous for “Bose-Einstein Theory” and a kind of particle in atom has been named after his name as Boson. • Satyendra Nath Bose had his schooling from Hindu High School in Calcutta. • He joined the newly established Dhaka University in 1921 as a Reader in the Department of Physics. • In 1924, Satyendra Nath Bose published an article titled Max Planck’s Law and Light Quantum Hypothesis. • The hypothesis received a great and was highly appreciated by the scientists. It became famous to the scientists as ‘Bose-Einstein Theory’. • In 1926, Satyendra Nath Bose became a Professor of Physics in Dhaka University. • In 1929 Satyendra Nath Bose was elected chairman of the Physics of the Indian Science Congress and in 1944 elected full chairman of the Congress. • Later he became the Vice Chancellor of the Viswabharati University. • In 1958, he was made a Fellow of the Royal Society, London. • Satyendra Nath Bose was honored with ‘Padmabhusan’ by the Indian Government in recognition of his outstanding achievement. • He died in Kolkata on February 4, 1974. 
<p>Defence Acquisition Council</p>	<p>Context: Defence Acquisition Council (DAC) accorded Acceptance of Necessity (AoN) for three capital acquisition proposals amounting to ₹4,276 crore.</p> <ul style="list-style-type: none"> • It includes Helicopter launched Nag (HELINA), Very Short-Range Air Defence Systems (VSHORAD) and BrahMos cruise missile launcher and Fire Control System (FCS) for naval ships. <p>About DAC:</p> <ul style="list-style-type: none"> • DAC is the highest decision-making body in the Defence Ministry for deciding on new policies and capital acquisitions for the three services – Army, Navy and Air Force, and the Indian Coast Guard. • The Defence Acquisition Council is headed by the Defence Minister. • Members: Minister of State for Defence, Chief of Army Staff, Chief of Naval Staff, Chief of Air Staff, Defence Secretary, Secretary Defence Research and Development, Secretary Defence Production, Chief of Integrated Staff Committees HQ IDS, Director General (Acquisition, Dy. Chief of Integrated Defence-Staff Member Secretary. • It was formed, after the Group of Ministers recommendations on ‘Reforming the National Security System’, in 2001, post Kargil War (1999). <p>About HELINA Missiles</p> <ul style="list-style-type: none"> • Missile is developed by Defence Research and Development Organisation (DRDO). • It is helicopter-launched version of the Nag Anti-Tank Guided Missiles (ATGM). • Air Force variant of NAG missile is known as ‘Dhruvastra’. • It’s a third generation ‘fire-and-forget’ class missile.

	<ul style="list-style-type: none"> It can be mounted on Advanced Light Helicopter (ALH). <p>About Very Short-Range Air Defence Systems (VSHORAD):</p> <ul style="list-style-type: none"> It is designed and developed indigenously by DRDO's Research Centre Imarat (RCI), Hyderabad, in collaboration with DRDO laboratories and Indian Industry Partners. It meant to kill low altitude aerial threats at short ranges. India has been in talks with Russia since 2018 to procure the Igla-S air defence missiles at a cost of \$1.5 billion under the VSHORAD programme in a bid to replace the Russian Igla-M systems. <p>Features of VSHORAD:</p> <ul style="list-style-type: none"> It is a man portable Air Defence System (MANPAD). It is a robust and quickly deployable system, which will strengthen India's air defence capabilities. Missile is propelled by a dual thrust solid motor—incorporates many novel technologies including miniaturized Reaction Control System (RCS) and integrated avionics.
Quantum Supremacy	<p>Context: Recently, a draft research paper claimed Google researchers have achieved a long sought- after goal in physics called "quantum supremacy".</p> <p>About Quantum Supremacy:</p> <ul style="list-style-type: none"> The phrase "quantum supremacy" was coined in 2011 by John Preskill. Quantum computing is the use of quantum-mechanical phenomena such as superposition and entanglement to perform computation. <ul style="list-style-type: none"> A quantum computer is used to perform such computation, which can be implemented theoretically or physically. Quantum supremacy refers to a quantum computer solving a problem that cannot be expected of a classical computer in a normal lifetime. Quantum supremacy is the point at which quantum computers can solve problems that are practically unsolvable for "classical" (nonquantum) computers to complete in any reasonable timeframe. It is generally believed that at least 49 qubits are required to cross the quantum supremacy line. Qubits behave very differently to bits in classical computers. <ul style="list-style-type: none"> Bits represent either a "1" or a "0," and computers read and perform operations on one bit at a time. <p>Application of Quantum Computing:</p> <ul style="list-style-type: none"> Artificial Intelligence (AI), Computational Chemistry, Financial services, Cryptography, Weather Forecasting, Climate modelling, Particle Physics Simulation, Logistics and Sheduling:
Leopard 2 Tank	<p>About Leopard 2 Tank:</p>

Leopard 2 tanks

Germany is under pressure to give Ukraine Leopard 2 tanks to help it fight Russia. The main battle tank is considered one of the best-performing worldwide.

Max speed
72km/h

Max Range
500km

Weight
62t

Crew
2

Armament
Rheinmetall 120mm
L55 smoothbore gun

Coaxial 7.62mm
machine gun

7.62mm Anti-aircraft
machine gun



• It is a **German made main battle tank**.

• Developed by German weapons manufacturer **Krauss-Maffei Wegmann (KMW)**.

African Swine Fever

About African Swine Fever:

- It is a **highly contagious viral disease** that **attacks pigs and boars**
- It is **endemic to sub-Saharan Africa** but has spread to many other regions of the world, including Asia and Europe.
- It has a **high mortality rate**.
- It is **not known to affect human beings**.
- There is **no cure** or precaution available for the infection yet.
- It can interfere with various cellular signalling pathways resulting in immunomodulation, thus making the development of an efficacious vaccine very challenging.
- In the acute form pigs develop a high temperature (40.5 degrees C or 105 degrees F), then become dull and go off their food. Other symptoms may include vomiting, diarrhoea (sometimes bloody), laboured breathing and coughing, abortion, still births and weak litters and unwillingness to stand.

Miscellaneous:

- Humans can be infected with avian, swine and other zoonotic influenza viruses, such as avian influenza virus subtypes A(H5N1), A(H7N9), and A(H9N2) and swine influenza virus subtypes A(H1N1), A(H1N2) and A(H3N2).
- Human infections are primarily acquired through **direct contact with infected animals or contaminated environments**, these viruses have not acquired the ability of sustained transmission among humans.

Platinum drugs

Context: Scientists from Agharkar Research Institute (ARI), Pune, an autonomous institute of the Department of Science and Technology, have discovered a Ruthenium–Ferrocene Bimetallic agent that shows a highly potent antitumor effect in platinum-resistant cancers.

About Platinum drugs:

- Platinum drugs are **chemotherapeutic agents** used for treatment of many types of cancers.
- Platinum-based **anticancer drugs** are- including **cisplatin, carboplatin, oxaliplatin, nedaplatin, and lobaplatin**.



- Patient can experience any combination of around 40 specific side effects by using it.

About Agharkar Research Institute (ARI):

- The Institute, founded in 1946 as the **Maharashtra Association for the Cultivation of Science Research Institute**.
- It was renamed in 1992 as the Agharkar Research Institute (ARI) in honour and memory of the Founder Director, the **late Professor Dr. Shankar Purushottam Agharkar**.
- The ARI is an **autonomous research institution fully funded by the Department of science and Technology (DST)** government of India, since 1966.
- It operates under the **overall umbrella of the Maharashtra Association for the Cultivation of Science (MACS)**.
- The current research activities encompass biological sciences and focus on three broad areas.
 - **Animal Sciences**
 - **Microbial Sciences**
 - **Plant Sciences**
- The ARI is also a main research centre under three All India co-ordinated research projects of the **Indian Council of Agricultural Research (ICAR)**: Wheat breeding, Soybean breeding and grape breeding.
- An agricultural farm located at **Hol, near Baramati**, about 80 km from Pune, conducts experiments on crop plants and for multiplication of seed of improved varieties.

Microplastics

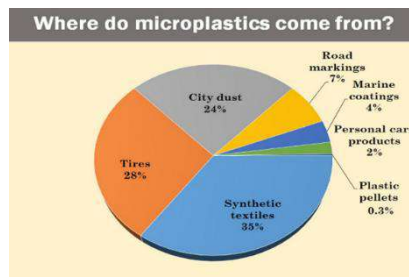
Context: Scientists from South Korea have developed a new water purification system that can quickly and efficiently filter out microplastics.

About Microplastics:

- Microplastics are those particles with less than 5 millimeters (0.2 inches).
- There are two types:
 - **primary microplastics** and
 - **secondary microplastics**.
- Primary microplastics are directly designed for commercial purposes:
 - **Nurdles:** small pellets that put together, melted and molded to make larger plastic shapes;
 - **Microbeads:** which are used in personal care products to help scrub off dead skin;
 - **Fibers:** many clothes today are made of synthetic plastic fibres like nylon and polyethylene terephthalate (PET).
- Secondary microplastics are formed as large, original plastic pieces break down into millions of smaller pieces.

Major sources of Microplastics:

- Plastic materials are either originated at land or at the ocean.



- Around **70-80% of ocean plastics** have land-based sources, while 20-30% of plastics come from marine sources.
- Of the plastic materials coming from marine sources, half is estimated to be caused by fishing fleets that leave behind **fishing nets, lines, ropes, and sometimes abandoned vessels.**
- Regarding land waste, discarded plastic materials enter the marine environment as **trash, industrial discharge, or litter via inland waterways, wastewater outflows, and wind transport.**

Effects of microplastics on human health:

- A case of the World Health Organization (WHO) claims with respect to drinking water, that “**microplastics are increasingly found in drinking water, but there is no evidence so far that this poses a risk to humans.**”
- It is also known that the **human body’s excretory system eliminates microplastics**, likely disposing of > 90% of ingested **micro- and nano plastic via faeces.**
- Ingested microplastics may cause inflammation in **tissue, cellular proliferation, and necrosis and may compromise immune cells.**

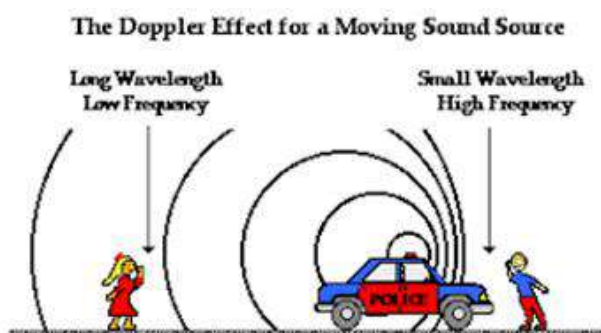
Doppler Weather Radar Network

Doppler Weather Radar Network:


- It aims to **predict extreme weather events more accurately.**
- Doppler radar is a specialized tracking system that **uses the Doppler effect** to track weather conditions and calculate information about the location and velocity of a storm or other forms of extreme weather events.
- Forecasting with the help of doppler radar is **more timely and accurate** which can be critical during safe evacuations in the likelihood of extreme weather events.
- IMD has augmented Doppler Weather Radar network in **HP, Uttarakhand, Ladakh and J&K** which will help further to predict extreme weather events more accurately.
- **Accuracy has increased by about 20-40%** for different severe weather events forecast during last five years by making best use of Space based observation of INSAT-3D and 3DR, OceanSat satellites for prediction

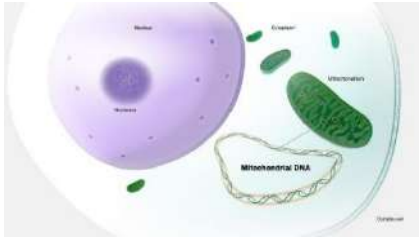
Doppler effect

- Doppler Effect refers to the **change in Wave Frequency** during the relative motion between a wave source and its observer.
- It was discovered by Christian Johann Doppler who described it as the **process of increase or decrease of starlight** that depends on the relative movement of the star.
- Doppler Effect works on **both light and sound** objects.
- For instance, when a sound object moves towards you, the frequency of the sound waves increases, leading to a higher pitch.



	<ul style="list-style-type: none"> Conversely, if it moves away from you, the frequency of the sound waves decreases and the pitch comes down. The drop in pitch of ambulance sirens as they pass by and the shift in red light are common examples of the Doppler Effect. Edwin Hubble made the discovery that the universe expands as a consequence of the Doppler Effect. It has important applications in the fields of astronomy and space technology. The use of Doppler Effect in astronomy in relation to light waves depends on the fact that the spectra of stars are not constant. Different stars exhibit different absorption lines at defined frequencies, but Doppler Effect is identifiable only when these absorption lines are away from these defined frequencies. <p>There are various applications of Doppler Effect. It is used in: Sirens, Astronomy, Radar, Medical imaging and blood flow management, Flow management, Velocity profile management, Satellite communication, Audio and Vibration measurement.</p>
<p>African animal trypanosomosis (AAT)</p>	<p>Context: Recently Ethiopia has released the first edition of an atlas to map Tsetse and Trypanosomosis affecting livestock in the country and the vector behind it.</p> <p>About ATT:</p> <ul style="list-style-type: none"> Also known as nagana or nagana pest, Animal African Trypanosomosis (AAT), is a protozoan parasitic disease of vertebrate animals. It affects cattle, water buffalo, sheep, goats, horses, pigs, dogs and other species. The disease is caused by the protozoan parasites Trypanosoma congolense, Trypanosoma vivax and, to a lesser extent, Trypanosoma brucei brucei which are all mainly transmitted by tsetse flies. Distribution: From the southern edge of the Sahara desert to Zimbabwe, Angola and Mozambique in the South. Epidemiology: Most trypanosomes develop for one to a few weeks in tsetse flies (Glossina spp.), which act as biological vectors. <ul style="list-style-type: none"> Trypanosomes can also be spread by fomites such as surgical instruments and mechanical vectors like biting flies including horse flies—especially T. vivax. Trypanosomes infect the blood of the host causing fever, weakness, lethargy and anaemia, which lead to weight loss and a reduction in fertility and milk production. <ul style="list-style-type: none"> No vaccine is available to prevent trypanosomiasis.
<p>National Genome Editing and Training Centre</p>	<p>In News: Union Minister of State Science & Technology; Minister of State Earth Sciences; MoS PMO, Personnel, Public Grievances, Pensions, Atomic Energy and Space will be inaugurating the 'National Genome Editing and Training Centre (NGETC)' and 'International Conference on Food and Nutritional Security-2023 (iFANS-2023)' at NABI, Mohali.</p>

	<p>NGETC:</p> <ul style="list-style-type: none"> • NGETC is a one-roof state-of-the-art facility that will serve as a national platform to cater to the regional needs to adapt different genome editing methods, including CRISPR-Cas mediated genome modification. • NABI has shown ability and can expand the genome editing tools to vast arrays of crops, including Banana, Rice, Wheat, Tomato, Maize and Millets. <p>The International Conference on Food and Nutritional Security:</p> <ul style="list-style-type: none"> • iFANS-2023 will be jointly organized by the National Agri-Food Biotechnology Institute (NABI), Centre for Innovative and Applied Bioprocessing (CIAB), National Institute of Plant Biotechnology (NIPB), and International Centre for Genetic Engineering and Biotechnology (ICGEB) at NABI, Mohali. <p>National Agri-Food Biotechnology Institute (NABI):</p> <ul style="list-style-type: none"> • It is the first Agri-Food Biotechnology Institute, established in India in 2010. • The institute is part of agri-food cluster in the “Knowledge City” of Mohali (Punjab) along with its neighbouring institutes. • Activities undertaken at NABI: Agricultural Biotechnology, Food and Nutritional Biotechnology, Human Resource Development, Meeting and Courses and Technology Transfer and Outreach.
<p>Halteria</p>	<p>Context: Scientists made a monumental breakthrough by identifying an organism, Halteria that dines entirely on viruses.</p> <p>About Halteria:</p> <ul style="list-style-type: none"> • Halteria is a microscopic ciliates (a single-celled organism with minuscule hairs) that populate freshwater worldwide which can thrive wholly on a virus-only diet or ‘virovory’. • Virovory is sufficient to support an organism’s physiological development and even population increase. • They’re made up of nucleic acids, a lot of nitrogen and phosphorous. 
<p>Ebola Disease</p>	<p>Context: Uganda recently declared the end of the Ebola disease outbreak caused by Sudan ebolavirus.</p> <p>About Ebola Disease:</p> <ul style="list-style-type: none"> • Ebola spreads through EBOV (Ebola virus) which is a virus belonging to the Filoviridae family of viruses. • It is mainly found in animals. • Ebola is a virus that causes severe inflammation and tissue damage throughout the body. • It is known as a haemorrhagic fever virus, because it can cause problems with the clotting system of the body and lead to internal bleeding, as blood leaks from small blood vessels. • Six different species of the virus have been found, but only four are known to cause disease in humans. • Ebola is spread through direct contact with body fluids — blood, saliva, sweat, tears, mucus, vomit, faeces, breast milk, urine and semen of people infected with it.

	<ul style="list-style-type: none"> It is also spread by touching things that have been contaminated with these fluids. The virus is named after the Ebola river (Republic of Congo) — as a village situated on its bank witnessed the first instance of the viral outbreak in 1976. <p>Treatment:</p> <ul style="list-style-type: none"> A vaccine for Ebola was approved by the Food and Drug Administration in 2019. It is a one-dose shot that protects against the variant of the Ebola virus that has caused the most serious outbreak so far. This vaccine is not likely to be effective against the Ebola Sudan strain that caused a 2022 outbreak in Uganda.
<p>DNA mitochondrial profiling</p>	<p>Context: Recently, Hair and bone samples of Shradha Walkar were sent for DNA mitochondrial profiling by police.</p> <ul style="list-style-type: none"> Mitochondrial DNA is the circular chromosome found inside the cellular organelles called mitochondria. Located in the cytoplasm, mitochondria are the site of the cell's energy production and other metabolic functions. Offspring inherit mitochondria — and as a result mitochondrial DNA — from their mother. <p>About DNA mitochondrial profiling:</p> <ul style="list-style-type: none"> It examines biological evidence when nuclear DNA is present in very low quantities or when bones and hair are degraded. It determines the mitochondrial DNA (mtDNA) sequence from samples such as hair, bones, and teeth. It can be done where DNA extraction is difficult. Mitochondria is extracted from the cell and genome sequence is then matched with the family. Maternal inheritance of mitochondria allows scientists to compare it with maternally related individuals of a missing person. Unique identifications are not possible using this analysis. 
<p>Earth Radiation Budget Satellite</p>	<p>Context: Recently, a defunct NASA satellite Earth Radiation Budget Satellite (ERBS) has fallen back to Earth after 38 years orbiting Earth.</p> <p>About Earth Radiation Budget Satellite:</p> <ul style="list-style-type: none"> It was launched in 1984 from space shuttle Challenger. It was part of NASA's three-satellite Earth Radiation Budget Experiment (ERBE) mission. It carried three instruments to measure— Earth's radiative energy budget and stratospheric constituents that includes ozone. It measured ozone, water vapor, nitrogen dioxide and aerosol concentrations in the Earth's stratosphere. An instrument on ERBS, Stratospheric Aerosol and Gas Experiment II (SAGE II), collected data that found that ozone layer was declining on a global scale.

	<ul style="list-style-type: none"> This helped to create Montreal Protocol Agreement, an international agreement signed in 1987 that resulted in a decreased use of ozone-destroying chlorofluorocarbons (CFCs).
Antimicrobial-resistant gonorrhoea	<p>In News: A strand of antimicrobial-resistant gonorrhoea outbreak has hit Kenya, according to researchers at the Kenya Medical Research Institute (Kemri).</p> <p>Gonorrhoea:</p> <ul style="list-style-type: none"> Gonorrhea is a sexually transmitted disease (STD) caused by infection with the <i>Neisseria gonorrhoeae</i> bacterium. <i>N. gonorrhoeae</i> infects the mucous membranes of the reproductive tract, including the cervix, uterus, and fallopian tubes in women, and the urethra in women and men. <i>N. gonorrhoeae</i> can also infect the mucous membranes of the mouth, throat, eyes, and rectum. Gonorrhoea is the second-most common disease to be sexually transmitted across the world after chlamydia, according to the World Health Organization (WHO). Transmitted through sexual contact with the penis, vagina, mouth, or anus of an infected partner. Gonorrhea can also be spread perinatally from mother to baby during childbirth. Ejaculation does not have to occur for Gonorrhea to be transmitted or acquired. Symptoms – urethral infection in men include dysuria or a white, yellow, or green urethral discharge, testicular or scrotal pain, etc. CDC now recommends a single 500 mg intramuscular dose of ceftriaxone for the treatment of Gonorrhea. <p>Antimicrobial-resistant gonorrhoea:</p> <ul style="list-style-type: none"> Overuse of antibiotics, genetic mutations of the bacteria and repeated use of poor-quality drugs makes it drug-resistant Drug-resistant super gonorrhoea was first detected in samples taken from sex workers in the capital city, Nairobi, and other urban areas like Kiambu County.
Exercise 'Varuna' 2023	<p>Context: The 21st Edition of the Bilateral Naval Exercise between India and France – Exercise Varuna commenced recently.</p> <p>About Exercise Varuna:</p> <ul style="list-style-type: none"> The Indian and French Navies have been conducting bilateral maritime exercises since 1993. Since 2001, these exercises have been called 'VARUNA'. The joint-exercises are held either in the Indian Ocean or Mediterranean Sea with the aim of improving Indo-French coordination on capabilities like: cross-deck operations, replenishment-at-sea, minesweeping, anti-submarine warfare and Information sharing. Other Indo-French Joint Exercises: <ul style="list-style-type: none"> Desert Knight-21 and Garuda (Air exercise) Shakti (Army exercise)



Biosensing system for the detection of Endocrine Disrupting Chemicals

Context: The Ministry of Electronics and Information Technology has launched the Technology for Biosensing system for the detection of Endocrine Disrupting Chemicals in aquatic ecosystems (MEAN).

- The **Centre for Development of Advanced Computing (C-DAC)**, Kolkata in collaboration with **ICAR-CIFRI, Barrackpore** under the '**National programme on Electronics and ICT applications in Agriculture and Environment (AgriEnIcs)**' has developed the technology.
- The **Biosensing based EDC detection system (MEAN)**, was also transferred to the selected industry **Arogyam Medisoft Solution Private Limited** for further commercialization of the same technology for deployment at different locations of North-East.

About Endocrine-Disrupting Chemicals (EDCs):

- Endocrine-disrupting chemicals (EDCs) are substances in **the environment (air, soil, or water supply), food sources, personal care products, and manufactured products** that interfere with the normal **function of your body's endocrine system**.
- Since EDCs come from many different sources, people are exposed in several ways, including the **air we breathe, the food we eat, and the water we drink**. EDCs also can enter the body through the skin.
- EDCs are chemicals or mixtures of chemicals that interfere with the way the body's hormones work.
- Some EDCs act like "**hormone mimics**" and trick our body into thinking that they are hormones, while other **EDCs block natural hormones from doing their job**.
- Other EDCs can **increase or decrease the levels of hormones** in our blood by affecting how they are made, **broken down, or stored in our body**.
- EDCs can disrupt many different hormones, which is why they have been linked to numerous adverse human health outcomes including alterations in **sperm quality and fertility, abnormalities in sex organs, endometriosis, altered nervous system function etc.**

Endocrine
Disrupting
Chemicals



About Centre for Development of Advanced Computing (C-DAC):

- The Centre for Development of Advanced Computing (C-DAC) is an **Indian autonomous scientific society**, operating under the **Ministry of Electronics and Information Technology** for carrying out R and D in IT, Electronics and associated areas.
- The setting up of C-DAC in 1988 itself was to **build Supercomputers** in the context of **denial of import of Supercomputers by the USA**.
- Since then C-DAC has been undertaking the building of multiple generations of **Supercomputer starting from PARAM with 1 GF in 1988**.



MISCELLANEOUS



Submarine Vagir

Context: The Indian Navy is set to commission the fifth of its diesel-electric Scorpene-class submarine Vagir.

About Submarine Vagir:

- Vagir is among the six submarines being built in India by the Mazagon Dock Shipbuilders Limited (MDL) Mumbai, in collaboration with the French M/s Naval Group under Project 75.
- It is a **diesel-electric attack submarine** based on the Scorpène class.
- It is named after the **Sand Fish of the Indian Ocean**.

The Yo-Yo test and DEXA scan

Context: The BCCI recently announced the (re)introduction of the Yo-Yo Test and the introduction of DEXA scans for the purposes of selection to the team.

About Yo-Yo test:

- The Yo-Yo test was first introduced to the Indian cricket team during Virat Kohli's fitness-focused captaincy reign.
- It is developed by Danish football physiologist Jens Bangsbo.
- It is a **maximal aerobic endurance fitness test**, involving running between markers placed 20 metres apart, at increasing speeds, until exhaustion.



About DEXA scans:

- DEXA scans were recommended as far back in 2011 because of a significant increase in players' workloads with the introduction of **T20 cricket and professionalisation of the game**.
- Through DEXA tests, the trainers will be **able to measure body fat percentage, lean muscle mass, water content and bone density**.
- It helps you understand where the fat is and whether the training methods are yielding the result.
- They're often used to help **diagnose bone-related health problems**, such as osteoporosis, or to assess the risk of getting them.

MAINS



POLITY & GOVERNANCE



National Green Hydrogen Mission

Context: The Union Cabinet, chaired by the Prime Minister has approved India's Rs 20,000 cr National Green Hydrogen Mission (NGHM).

About Hydrogen:

- Hydrogen is the chemical element with the symbol H and atomic number 1.
- Hydrogen is the lightest element and the most abundant chemical substance in the universe, constituting roughly 75% of all normal matter.
- It is colourless, odourless, tasteless, non-toxic, and highly combustible.
- Hydrogen fuel is a zero-emission fuel burned with oxygen. It can be used in fuel cells or internal combustion engines and as a fuel for spacecraft propulsion.

Benefits of Green Hydrogen

- Creation of export opportunities for Green Hydrogen and its derivatives
- Decarbonisation of industrial, mobility and energy sectors
- Self-Reliance: Reduction in dependence on imported fossil fuels and feedstock
- Make in India, for India: Development of indigenous manufacturing capabilities
- Creation of employment opportunities
- Development of cutting-edge technologies

Brown Hydrogen	Grey Hydrogen	Blue Hydrogen	Green Hydrogen
Hydrogen produced when coal is transformed under high pressure conditions, and the resulting carbon dioxide is released back into the air.	Hydrogen produced when natural gas is transformed by burning methane and the resulting carbon dioxide is released back into the air.	Hydrogen produced from natural gas, but the output carbon dioxide is captured and stored thereby avoiding carbon emissions.	Hydrogen extracted from water using a method called electrolysis that is powered by renewable energy such as wind/solar (as per picture below)

Major Challenges in harnessing Green Hydrogen:

- Lack of fuel station infrastructure: India will need to compete with around 500 operational hydrogen stations in the world today which are mostly in Europe, followed by Japan and South Korea.
- Energy-intensive nature of Hydrogen generation process:
- The technology is in an infant stage and the energy requirement for splitting water or Methane is high. Besides, the whole process is costly at present.
- High R and D requirement for the newer technology for making the process cheap and operational and scalable.
- Multiplicity of regulatory authorities: Involvement of multiple Ministries and Departments causes red tape in government functioning.
- Risks associated with the transportation of hydrogen: Hydrogen in gaseous form is highly inflammable and difficult to transport, thereby making safety a primary concern.

About National Green Hydrogen Mission (NHM):

- NGHM is a part of National Hydrogen Mission (NHM) which was announced by the finance minister in the Union Budget 2021-22.

- The Prime Minister of India also announced the National Hydrogen Mission on India's 75th Independence Day.
- The Ministry of New and Renewable Energy (MNRE) will formulate the scheme guidelines for implementation of the respective components.

Objectives of the mission:

- To make India a global hub for the production and export of green hydrogen.
- To harness green hydrogen energy to fulfill India's Nationally Determined Contributions (NDCs).

Key Components of the mission:

- The NGHM will facilitate demand creation, production, utilization and export of Green Hydrogen.
- The Mission will also support pilot projects in emerging end-use sectors and production pathways.
- An enabling policy framework will be developed to support establishment of the Green Hydrogen ecosystem.
- A public-private partnership framework for R&D will be facilitated under the Mission. R&D projects will be goal-oriented, time bound, and suitably scaled up to develop globally competitive technologies.

Significance of the NGHM:

- Renewable Energy Capacity Enhancement: Development of green hydrogen production capacity of at least 5 MMT (Million Metric Tonne) per annum.
- An associated renewable energy capacity addition of about 125 GW in the country
- It will boost Investment opportunities for India and create sustainable employment.
- Cumulative reduction in fossil fuel imports.
- Green House Gas Emission Reduction: Abatement of nearly 50 MMT of annual greenhouse gas emissions and help government in achievement the commitments made at COP 26.

Way Forward:

The National Hydrogen Mission have the capability of ensuring integration of India's clean energy supply chains with that of the world when Inter-Ministerial and various departments work together.

The Mission will also will ensure realization of the goal of making India carbon neutral and global hub of clean hydrogen energy and will have multiplier effects on the \$5 trillion economy.

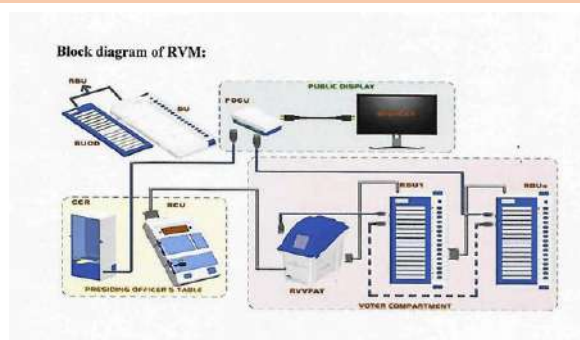
Remote voting machines

Context: The Election Commission of India (ECI) could not demonstrate a prototype of its new Remote Electronic Voting Machine (RVM), which would allow domestic migrants to vote in national and regional elections.

- EVMs started being used on a larger scale in 1992 and since 2000, have been used in all Lok Sabha and State Assembly elections.

About Remote Voting Machines:

- The Multi-Constituency RVM for migrant voting will have the same security system and voting experience as the EVM.
- RVM can handle multiple constituencies (up to 72) from a single remote polling booth.



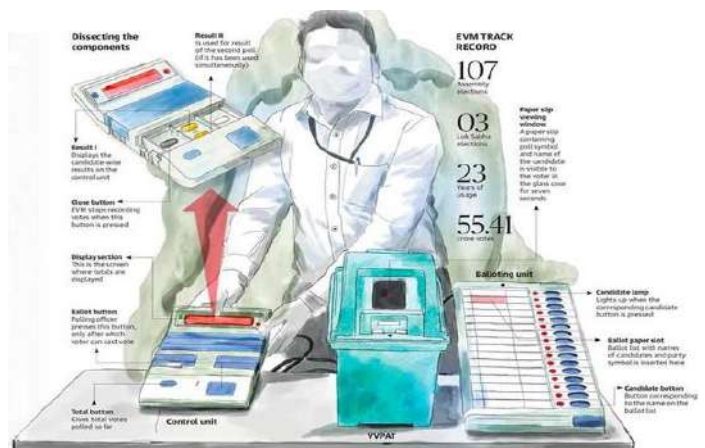
- For this, instead of a fixed ballot paper sheet, the machine has been modified to have an electronic dynamic ballot display which will present different candidate lists corresponding to the constituency number of the voter read by a constituency card reader.
- The ECI has added a digital public display unit or a monitor to act as an interface between the constituency card reader and the BU display.
- the electronic ballot will be prepared by the Returning Officers (ROs) of home constituencies of voters, and forwarded to the remote RO for uploading in the SLU.

Concerns of RVM:

- **Lack of clarity on how these new devices communicate with each other, Whether it is a device with programmable memory**
- Question on integrity – would it be possible to mess with the digital display to show a modified list to the voter, since the unit is connected to an external device for symbol loading
- Logistical and administrative challenges – including voter registration in remote locations, how names will be removed from the electoral rolls of the home constituency, how remote voting applications will be made transparent etc.
- Further, the challenges regarding the current EVMs will persist when it comes to the RVMs.

How do existing EVMs work?

- The latest EVM is an **M3 model** which was manufactured from 2013 onwards.
- It has a **Balloting Unit (BU)** which is **connected to the VVPAT printer**, both of which are **inside** the voting compartment.
- The **VVPAT is connected to the Control Unit (CU)**, which sits **with the Presiding Officer (PO)** and **totals** the number of votes cast, on its display board.
- Only once the PO presses the **ballot button on the CU**, does the BU get **enabled for the voter to cast her vote** by pressing the key corresponding to the candidate on the ballot paper sheet pasted on the BU.
- The VVPAT, which is essentially a printing machine, prints a slip with the poll symbol and candidate name, once the voter presses the key on the BU.
- This slip is visible to the voter on the VVPAT's glass screen for seven seconds after which it gets dropped off in a box inside the VVPAT.
- **Once a vote is cast, the BU becomes inactive** till the PO schedules the next vote by enabling it again from the CU



Voter Verified Paper Trail Audit (VVPAT)

- Developed by ECI along with two Public Sector Undertakings (PSU), in 2010
- It is a mechanism that could help verify that the EVM had recorded the vote correctly as intended by the voter
- The use of VVPATs has become universal in elections since mid-2017.
- To create a VVPAT sheet on the **laptop**, an **application** is either downloaded from the ECI server or copied from a local device.

- It is then **uploaded to another device** or the Symbol Loading Unit (SLU) through a nine-pin cable, which in turn is **connected to the VVPAT for upload**. This process raises questions.

Significance of Indian EVMs

- **They are standalone**, are **not connected to the internet**, and have a **one-time programmable chip**, making tampering through the hardware port or through a Wi-Fi connection impossible.
- As per ECI, EVMs are “robust, secure, and tamper-proof”, owing to the technical and institutional safeguards in place.
- Such as the **sealing of machines** with signatures of polling agents, first-level checks, **randomisation of machines**, and a series of **mock polls** before the actual voting, cannot be circumvented.

Concerns about EVMs:

- A 2021 report titled, ‘Is the Indian EVM and VVPAT System Fit for Democratic Elections?’ highlighted the widely recognised ‘**democracy principles**’ to be adhered to while conducting **public elections**.
- **Lack of transparency** – Details of the EVM design, prototype, software, and hardware verification are **not publicly available** for technical and independent review, rendering it available only for a **black-box analysis**, where information about its inner workings is not accessible.
- **EVM tampering** – claim that EVM tampering through a WIFI connection is not possible has been disrepute by multiple computer scientists as it **does not take into account ‘side-channel’, insider fraud, and trojan attacks**.
- Besides, the **OTP chip which cannot be rewritten, also has a flip side Outsourcing** – The ECI sends the EVM software to two **foreign chipmakers** (in the U.S. and Japan) to burn into the CPU and the manufactured chips are then sent to India for assembly into machines by the two PSUs (BEL and ECIL).
- This means that the **manufacturers cannot read back the contents of the software to ensure its integrity is intact**.
- **Functionality tests** done by manufacturers can only reveal if the machine is working properly.
- **Hacking** – A fixed number of votes are casted at the beginning of the polls in each polling station. Thus, a **hack can easily bypass the first few votes**, thereby **preventing detection of foul play** as every key press in the EVM is date and time stamped”.

Concerns with VVPAT:

- **EVM Tampering** – Even if the voting machine is tampered, the same should be detectable in an audit.
- **Machine dependence** – For the voting process to be verifiable and correct, it should be machine-independent, or software and hardware independent, meaning, the establishment of its veracity should not depend solely on the assumption that the EVM is correct.
- **Voter verification** – The current VVPAT system is **not voter verified in its full sense**, meaning, while the voter sees their vote slip behind the VVPAT’s glass for seven seconds, it does not mean they have verified it.
- **Vote cancellation** – That would happen if the voter got the **printout in their hand**, was able to approve it before the vote is finally cast, and was **able to cancel** if there is an error.

- Former IAS officer **Kannan Gopinathan**, notes “voter should have full agency to cancel a vote if not satisfied; and that the process to cancel must be simple and should not require the voter to interact with anybody.
- **Voter penalisation is discouraging** – Under the current system, if the **voter disputes** what they have seen behind the screen, they are allowed a **test vote in the presence of an election officer**, and if the outcome of the test vote is correct, the **voter can be penalised or even prosecuted**.
- **Questionable Assurance** – **by ECI** that the EVM-VVPAT system is not connected to any external device has been questioned by former civil servants.
- Since, for the VVPAT to be able to generate voting slips, the symbols, names and the sequence of the candidates need to be uploaded on it which is done by connecting it to a laptop.
- **Opacity regarding communication protocol** – If the VVPAT is cleared and loaded with new information for every election, does this mean it has a programmable memory? These questions remain unaddressed.

Way forward

- Ronald Rivest, an MIT professor and the **inventor of encryption**, defined that “a voting system is software (hardware) independent if an **undetected change in software (hardware) cannot lead to an undetectable change in the election outcome**”
- Elections should uphold the democratic principles – The election process should not only be free and fair but “also be seen to be free and fair”, meaning instead of being told to trust the process the general public should be provided with provable guarantees to facilitate this trust.

Digitalization of Judiciary in India

Context: India takes an average of 2,184 days to dispose of a case in its subordinate courts, 1,128 days in its High Courts, and 1,095 days in the Supreme Court, bringing the total life cycle of a case in India to 12+ years.

- Indian Judicial System has been suffering from pendency of cases.
- Over 4.3 Crore cases have been pending at various stages of the judicial process.
- Digitization of the Judicial process holds promise in reaffirming the trust of the citizen in the Judiciary.

About Digitization of the Judicial Process:

- Digitization refers to the **increased usage of digital technology to perform conventional tasks**, thereby reducing time and enhancing public service delivery.
- In the context of the Judicial Process, **it stands for documentation of the case in digital format**.
- Richard Eric Susskind in his book, The Future of Law, has written that in the coming years, **lawyers and their litigants will communicate through email**.

Evolution of digitization in Administration and Judiciary

- In India, e-governance in the field of administration of justice began in the late 1990s, but it accelerated after the enactment of the Information and Technology Act, 2000.
- **2006:** e-courts were launched as a part of the National e-Governance Plan (NEGP).
- **Guiding star:** Chief Justice of Allahabad HC, Justice D Y Chandrachud
- Conceptualized and initiated the project to digitize approximately one crore case files in one year.

- **Necessary:** A large space required to store so many files + becoming difficult to manually preserve the decades-old documents + To ensure that these files are traceable electronically as and when required.
 - The consequences of missing court records are grave.
- **In-State of Uttar Pradesh v. Abhay Raj Singh:** Held by the Supreme Court that if court records go missing and re-construction is not possible, the courts are bound to set aside the conviction. Thus, convicts can go free for want of court records.

Benefits of usage of technology and digitisation:

- **Reduction in the need for storage infrastructure for case files:**
 - This space could be utilised for increasing courtrooms and recruiting more judges for enhanced access to justice and speedy Justice delivery.
 - **Judges – Population ratio:** 20 per Million for India (whereas for other countries it is approximately double).
- **Increased traceability of Case files:**
 - This will reduce adjournments due to the traceability of affidavits which were stored electronically.
- **Reduced time for Court proceedings:**
 - The time consumed in summoning records from the lower courts to the appellate courts is one of the major factors causing delays in cases.
 - Due to the digitisation of the records, this time would reduce significantly.
- **For ensuring real justice:**
 - In '**State of Uttar Pradesh v. Abhay Raj Singh**', it was held by the Supreme Court that if court records go missing and reconstruction is not possible, the courts are bound to set aside the conviction.
 - This would allow the accused to not be held accountable for the crimes committed.
 - This would lead to a miscarriage of Justice and hence digitisation provides a panacea against this.
- **For increased ease of procedure in the judicial ecosystem:**
 - Lawyers can check the status of the filing, the status of applications and affidavits, the date of the next hearing, orders passed by the courts etc. just by clicking on an app.
 - It would no more be required to physically visit the courts to know the status of the case.
- **Increased openness and transparency:**
 - A litigant can be more informed about the status of his/ her court case.
 - This will lead to enhanced trust in Judiciary.

Challenges associated with digitization of judicial records:

- Digitisation and usage of digital infra require increased funding.
- **Digital Literacy amongst the stakeholders is abysmal**
 - Lawyers and Judges struggled to shift to virtual hearings during the pandemic.
- The status of it is **poor in the case of the rural population.**
- **Privacy Concerns-** With increasing digitisation, especially of court records, privacy concerns are likely to be at the forefront of judicial and public deliberations in the coming years.
- **Hacking and Cyber security-** On the top of technology, cyber-security will be a huge concern too.
 - The government has initiated remedial steps to address this problem and formulated the Cyber Security Strategy.
- Not every case can be disposed of virtually nor can these be live-streamed.

- Deployed with adequate planning and safeguards, technological tools can be a game changer.
 - However, technology is not per se value-neutral — that is, it is not immune to biases. Power imbalances need to be checked upon.
- Lack of a well-equipped space where lawyers can conduct their cases.

Steps taken for the usage of technology in Judicial Process

Digitisation of judicial records and establishment of e-courts

e-Courts Project:

- This was conceptualized under the “**National Policy and Action Plan for Implementation of Information and Communication Technology (ICT) in the Indian Judiciary-2005**”.
- The e-Committee is the governing body charged with overseeing the e-Courts Project.
- Its vision is to transform the judicial system of the country through the ICT enablement of courts.
- e-filing of cases/petitions by state governments in all matters has been made mandatory from January 1, 2022.

National Judicial Data Grid:

- **National Judicial Data Grid (NJDG)** is a database of orders, judgments and case details of 18,735 computerised District and Subordinate Courts created as an online platform under the e -Courts Project.
- Data is updated on a near real-time basis by the connected District and Taluka Courts and High Courts.

SUPACE:

- It is short **form of Supreme Court Portal for Assistance in Court’s Efficiency**.
- It is a **composite AI-assisted tool**.
- It makes all relevant cases available to a judge/ legal researcher for making an informed decision.

SUVAS:

- It is **short form of Supreme Court Vidhik Anuvaad Software**.
- It is used to translate SC judgments into regional languages.

Virtual hearings in Courts:

- The **Supreme Court in Anjali Brahmawar Chauhan v Navin Chauhan** allowed the family court, Gautam Buddha Nagar, to conduct the trial of a matrimonial case through video-conferencing.

Live Streaming of Courts’ proceedings:

- On the basis of the judgment in Swapnil Tripathi, in 2018 the Supreme Court allowed the live-streaming of cases of constitutional and national importance.
- Gujarat High Court became the 1st court in the country to live stream its proceedings.

Way Forward:

As the technology grows, concerns about data protection, privacy, human rights and ethics will pose fresh challenges and hence, will require great self-regulation by developers of these technologies. It will also require external regulation by the legislature through statute, rules, regulation and by the judiciary through judicial review and constitutional standards.

The cases related to matrimonial issues and domestic violence, bounced cheques, motor accident compensation referred to mediation centres and Lokadalats could be included in the list of cases fit for disposal through the virtual hearing.

World Economic Forum's Global Risks Report 2023 and Polycrisis

Context: The World Economic Forum in its 'Global Risks Report 2023' warned that the world could see a poly crisis emerging from the Russia-Ukraine war.

About Polycrisis:

- The term poly crisis was **first used in the 1990s by French theorist of complexity Edgar Morin.**
- When **multiple crises in multiple global systems** become causally entangled in ways that significantly degrade humanity's prospects.
- These interacting **crises produce harms greater than the sum of those the crises would produce in isolation**, were their host systems not so deeply interconnected.
- The 'Polycrisis' was first used by **former European Commission president Jean-Claude Juncker** to describe Europe's combustible situation in 2016 which **combined indebtedness with Brexit, climate change and a refugee crisis.**

World Economic Forum on Polycrisis and its Impacts:

- The report has mentioned that the world is facing a **set of risks that feel both wholly new and eerily familiar.**
- There are older and familiar risks which are **getting entangled with the new and emerging risks which collectively can lead to a Polycrisis.**
- **Older risks:** These include **inflation, cost-of-living crisis, trade wars, capital outflows from emerging markets, widespread social unrest, geopolitical confrontation and the spectre of nuclear warfare.**
- **New developments:** These include **unsustainable levels of debt, a new era of low growth, low global investment and de-globalisation, a decline in human development, and the growing pressure of climate change.**



According to the report, these global risks classified into short term and the long term risks:

- **Short term risks:** These include the rising cost of living, slow economic growth, and tight global food and energy supplies.

- **Long term risks:** These are failure to mitigate climate change, failure to adapt to climate change, extreme weather events, and the threat of biodiversity collapse.
 - The report further goes on to state that these risks may converge into a Polycrisis by the end of the decade.

India's plan to eradicate measles, rubella

Context: As the new year dawned, so did a crucial target for India. India had set a target to **eliminate measles and rubella (MR) by 2023**, having missed the earlier deadline of 2015 as well as the extended deadline of 2020, due to a variety of reasons, exacerbated by disruptions due to the COVID-19 pandemic.

- MR elimination is **defined as zero transmission of measles and rubella viruses, evidenced by zero clinical disease, sustained over three years.**

About Measles and Rubella:

- **Measles:** It is a highly **contagious viral disease**.
 - Despite the availability of a safe and effective vaccine, measles remains an important cause of death among young children globally.
 - It can also lead to serious adverse outcomes such as blindness, pneumonia and encephalitis.
- **Rubella:** It is an acute, **contagious viral infection**.
 - While rubella virus infection usually causes a mild fever and rash in children and adults, infection during pregnancy, especially during the first trimester, can result in miscarriage, Fetal death, stillbirth, or infants with congenital malformations, known as congenital rubella syndrome (CRS).

Need for the elimination of Measles and Rubella:

Measles:

- In the pre-vaccination era, while polio paralysed about 1% of all children before the age of five, measles actually killed 1% of all under-five children.
- During measles outbreaks, the case-fatality rate was about 10%-15%.
- Children who recovered would have lost weight as well as the steady momentum of cognitive development and scholastic performance.
- Measles affects the immune system rendering the child vulnerable to other infectious diseases, leading to high mortality over the next two to three years.

Rubella:

- The rubella virus is a slower transmitter and the risk of rubella is extended from childhood through adolescence into the reproductive age range.
- Unfortunately, if a pregnant woman gets infected, the virus tends to cross the placenta and damage the developing foetus's eyes, brain, heart and other tissues.
- Therefore, Measles-Rubella elimination is of very high priority.
- The MR vaccine is a combined product, targeting two diseases in one shot.

Challenges associated with the elimination:

- School managements, teachers, children themselves and parents were not informed of the basis of school-based campaigns of Measles-Rubella (MR) vaccination.
- The set targets were not achieved due to gaps in immunisation.
- The COVID-19 pandemic stole two years from the programme.

Government of India Initiatives to eliminate Measles and Rubella:

- **National Strategic Plan:**
 - Measles and rubella (MR) elimination is a national health priority and the government has adopted the **National Strategic Plan for Achieving and Sustaining Measles and Rubella Elimination in India**.
- **Target:**
 - The Government decided to eliminate measles and rubella from India by the year 2020 having missed the earlier set target of 2015 and the **MR elimination target was reset to 2023**.
- **Campaigns:**
 - The **school-based campaigns** of Measles-Rubella (MR) vaccination of children from 5 to 15 years, conducted in all States, in 2017.
 - Success was good in a few States, **but not in others**.
 - The country is moving towards the MR elimination goal of achieving and sustaining vaccination coverage of 95% with two doses of a measles- and rubella-containing vaccine at the national and subnational levels.
- **Universal Immunisation Programme (UIP):**
 - **India's Universal Immunisation Programme (UIP)** provides free vaccines against 12 life threatening diseases.
 - It provides life-saving vaccines to all children across the country free of cost to protect them against **Tuberculosis, Diphtheria, Pertussis, Tetanus, Polio, Hepatitis B, Pneumonia and Meningitis due to Haemophilus Influenzae type b (Hib), Measles, Rubella, Japanese Encephalitis (JE) and Rotavirus diarrhoea**. (Rubella, JE and Rotavirus vaccine in select states and districts)

Way Forward:

- It is the high time to further strengthen routine immunisation through intensified efforts to close immunity gaps through **Intensified Mission Indradhanush**, with a special focus on the first and second dose of measles- and rubella-containing vaccines.
- We can reach MR elimination goals in India if we strengthen surveillance by finding, investigating, and collecting and testing a sample for every suspected case, in each district in every state and UT.
- It is important to provide full support to the ground level staff who implement the programme — the village health nurses, **ASHA (accredited social health activists) workers, Anganwadis and ICDS (Integrated Child Development Services) workers**.
- While targets will be easier to achieve in States such as Tamil Nadu and Kerala, thanks to the robust immunisation infrastructure, in the other States, additional efforts should be taken to work towards achieving the target.

Development of Sustainable Urban Infrastructure

Context: A report by the World Bank, released last year, on financing India's urban infrastructure needs, focuses on private investments ameliorating urban problems.

About Urbanization:

- Urbanisation is the **increase in the proportion of people living in towns and cities**.
- Urbanisation occurs because people move from rural areas to urban areas (towns and cities).
- This usually occurs when a **country is still developing**.
- **Employment Factor:**
 - In India, people have been attracted to move from rural to urban areas on account of improved employment opportunities.
- India is home to **11% of the total global urban population**.
- From a population of 377 million in 2011, Indian cities are **projected to house 870 million people by 2050**, according to the UN's projections which is by far the highest among all nations.
- **Delhi is likely to become the world's most populous urban agglomeration by 2030, surpassing Tokyo.**



Highlights of the report:

- The World Bank estimates that nearly **\$840 billion (Rs. 70 lakh crore)** would be needed for investment in urban India to meet the **growing demands of the population, and \$55 billion would be required annually**.
- **Revenue by Cities:**
 - This report already points out that **nearly 85% of government revenue is from the cities**.
 - This means that urban citizens are contributing large revenues even as the **World Bank report** emphasises the levying of more burdens in the form of user charges on utilities, etc.

Challenges faced by Urban Cities in India:

- **Poor Water Supply and Waste Management:** Water supply is unreliable and irregular among major cities.
 - Mountains of solid waste sit on the fringes of our cities.
 - Poor drainage, congested roads and deteriorating air quality are other challenges.
- **Affordable Housing:** Inadequate affordable housing has meant that almost one-sixth of the urban population lives in slums.
- **Issues of Urban Slums:** Urban Slums are subject to insecure land tenure, lack of access to basic minimum civic services such as safe drinking water, sanitation, storm drainage, solid waste management, internal and approach roads, street lighting, education and health care, and poor quality of shelter.
- **Poor Urban Planning:** The existing urban planning and governance framework is complex, which often leads to ambiguity and a lack of accountability.
 - City planning has become a highly technocratic exercise with long delays and there is a need for the demystification of the master plans.

- **Funding:** More sources for funding are required like resources other than the public budget need to be tapped. High prices will make services unaffordable.
- **Migrant Crisis:** Urban dwellers are ignored and unable to live, work and play safely and happily.
 - An urbanisation policy needs to take cognisance of future mobility patterns.
- **Lack of Coordination:** Lack of synergy between urban and rural planning and development. The 'State Town and country planning acts need to be revisited to harmonise the two.
- **Connectivity and Congestion:** Congestion and delays in both passenger and commercial traffic are widespread in Indian cities.

Government of India Initiatives:

- **Smart Cities Mission:** The Smart Cities Mission is a major urban renewal program launched by the Government to **develop and upgrade living conditions and infrastructure in selected 100 cities all over the country.**
 - Objective of the programme is to **modernize cities by providing core infrastructure** and give a decent quality of life to its citizens, a clean and sustainable environment and application of 'Smart' Solutions.
 - **Ministry of Urban Development** is the anchoring agency for the implementation of the project.
- **Atal Mission for Rejuvenation and Urban Transformation (AMRUT) Project:** Atal Mission for Rejuvenation and Urban Transformation (AMRUT) along with smart cities were jointly planned and launched by the government to transform urban living conditions through infrastructure up gradation.
 - **AMRUT** is aimed at transforming 500 cities and towns into efficient urban living spaces over a period of five years.
 - **Ministry of Urban Development** has selected the five hundred cities with the help of state governments.

World Banks's Suggestions:

- The solutions suggested include improving the **fiscal base and creditworthiness of the Indian cities.**
- Cities must institute a **buoyant revenue base** and be able to recover the cost of providing its services.
- In simpler terms, it means **increasing property taxes, user fees and service charges to name a few.**



ECONOMY



Digital Economy

Context: The Reserve Bank of India (RBI) recently launched the pilot for its digital rupee — India's very own digital currency.

- The pilot covers select locations in a closed user group (CUG) comprising about 15,000 customers and merchants across the country such as Mumbai, New Delhi, Bengaluru and Bhubaneswar.
- So far, four banks — State Bank of India, ICICI Bank, Yes Bank and IDFC First Bank — are part of the first phase of the pilot.

E-RUPEE Project:

- Central Bank Digital Currency (CBDC) or e-rupee is an initiative of the RBI.
- The CBDC is **legal tender** issued by the RBI in **digital form**, which can be **transferred electronically** from one holder to another.
- It is the same as a **fiat currency** and it is **exchangeable** one-to-one with government-issued money.
- Simply put, the digital rupee is the same as a banknote or coin that we use daily, only it is in a digital form.
- E-rupee will be issued in the **same denominations as paper currency and coins**.
- It will be distributed through intermediaries, i.e, **banks**.
- To send or receive digital money, a **digital wallet** is a must.
- Users can **link** their wallet **to their bank accounts** and load them and use digital money for individual payments or at the merchant shops.
- These digital wallets offered by the participating banks are **stored on mobile phones and devices**.
- E-rupee transactions can be both person to person (**P2P**) and person to merchant (**P2M**).
- For P2M transactions, such as shopping, there will be **QR codes** at the location.
- Users will be able to **withdraw digital tokens from banks** in the same way they currently withdraw physical cash.
- Users will be able to keep the **digital tokens in the digital wallet**
- These digital tokens can be **spent online or in person, or transfer** them via an app.
- Like a person making a cash transaction above a certain threshold needs to submit his or her **PAN**. The same rule will apply to the digital rupee.

E-RUPEE PROJECT

■ e-rupee is a digital token that will be the equivalent of a banknote, and can be transferred electronically.

■ Pilot project involves a closed user group of about 15,000 in Mumbai, New Delhi, Bengaluru and Bhubaneswar.

■ Banks involved are SBI, ICICI Bank, Yes Bank and IDFC First Bank.

Banks would send out a link to identified customers through an email or text message, whereby the e-Re app could be downloaded.

Significance/Objective

- **Faster** since it requires no intermediation of banks. Providing **instant transfer** of funds for the customer.
- **No requirement of settlement** for the banks or ecosystem participants
- **Saving on cost of printing, transporting and storing currencies** and coins that can be rationalised through e-Re.
- **Financial inclusion and formalising the digital consumption of money.**
- E-Re is also targeted at **those who don't have a bank account**, but can use digital currencies similar to a pre-paid mobile recharge card.

Using the mobile number, the customer verification or KYC would be conducted and upon successful completion of KYC, the digital wallet is good to use.

Difference between E-rupee and UPI:

- Digital rupee is a **store of value like currency**, while **UPI is just an overlay infrastructure** on top of any form of store of value like bank accounts (which have normal currency), prepaid instruments, credit cards, etc.
- **No intermediation of banks** – UPI or NEFT or RTGS must go through a bank while in the case of the e-Rupee, the **money gets transferred from one wallet to another**
- **Anonymity** – The transactions via digital rupee are more anonymous than the current digital transactions including UPI, NEFT, RTGS (can be easily tracked since involves intermediary banks)
- **Holding limit** – SBI has allowed Rs 1 lakh holding limit for the wallet while upper limit per UPI transaction is Rs 2 lakh.
- **Process** – When we pay in UPI, the amount is deducted from bank account, while on payment using e-rupee, the amount is deducted from digital wallet.
- **Settlement risk** – exists in UPI since it works on settlement basis between two banks and at the backend it takes about a day for settlements among banks to conclude.
- **Cheaper** – e-Re usage of cash does not involve any charges. UPI is free now, but could become chargeable going ahead.

Issues in E-rupee:

- **Anonymity** – In digital currency, even though the transactions are recorded in the centralised ledger, it is anonymous as the owner of the wallets are not known to the government or intermediaries in the ecosystem
- While UPI is a bank-to-bank payment mode, there is a transaction or audit trail it leaves.
- **Cannibalisation of UPI** – UPI works on a settlement basis between two banks; at the backend, it takes about a day for inter-bank settlements to conclude. Hence there is a **settlement risk in UPI**
- **Delay in transactions** – If there is a delay in a transaction or if it fails, customers prefer paying using other digital payment modes, which are currently faster
- **Practical problems** – A customer who paid using e-rupee is later unable to make the CBDC transaction
- **Success depends on Acceptability** by large and reciprocal number of users.
- **Established ease of use of UPI** – From a customer perspective, whether merchant or retail, UPI has established ease of use. Therefore, e-Re needs to prove that it is equally user-friendly with sound technology and data privacy provisions, to lure users.

- **Digital theft** such as hacking and virus attacks, which could deter some people.
- **Cultural and social mind-set** in the country, which leads to greater use of physical currency, is also a hinderance.

Way forward:

- The digital economy can contribute up to 20% or \$1 trillion of India's \$5 trillion economy vision.
- But in developed countries, they have been spending ~1.2% of their GDP on digital infrastructure.
- The Indian government too needs to acknowledge digital infrastructure as a fundamental transformational area and give it the same importance it gives to physical infrastructure, where 80% of its investment goes.

Cloud Forest Bond

In News: According to a new report, Cloud Forest Assets Financing is a Valuable **Nature-Based Solution** released by **Earth Security** – a global nature-based asset management advisory firm.

- The report is aimed at three stakeholders – national governments, non-profits and communities.

About cloud forests:

- Cloud Forests are **montane rainforests** refer to the vegetation of **tropical mountainous regions** where there is **heavy rainfall** and persistent **condensation** resulting from the cooling of the moisture being pushed upwards by the mountains.
- They are usually characterized by a persistent, frequent and seasonal low-lying layer of **mist and cloud cover** usually at the canopy level.
- Cloud forests are **rare** since the exceptional conditions that create these forests are only found in tropical areas with tall mountains.
- Due to their unique characteristics, cloud forests are usually found along the sides of the mountains at elevations of between 3000 and 10000 feet but as low as 1650 feet in the Tropics between coordinates 23°N and 23°S.
- Only **1% of the global woodlands** are considered as cloud forests following a decline from 11% in the 1970s due to interferences by human activities and global warming.
- Just **25 countries hold 90 per cent of the world's cloud forests**
- These twenty-five countries are Indonesia, Tanzania, Democratic Republic of Congo, Colombia, Peru, Venezuela, Mexico, Papua New Guinea, **Brazil**, Ethiopia, Ecuador, Cameroon, Bolivia, **China**, Laos, Kenya, Malaysia, Angola, Uganda, Madagascar, Philippines, Gabon, Vietnam, Republic of Congo and **Myanmar**.

Significance:

- Their hydrological function is of existential value to millions of people living downstream.
- They **capture moisture from the air, providing fresh and clean water to people** and industries below.
- These 25 countries have around **979 hydropower dams** and around half of them use water from the cloud forest.
- The total value of hydroelectricity that currently depends on cloud-affected forests across these 25 countries is estimated to be **\$118 billion** over 10 years. This will increase to **\$246 billion** when new hydropower plants that are being developed become operational.

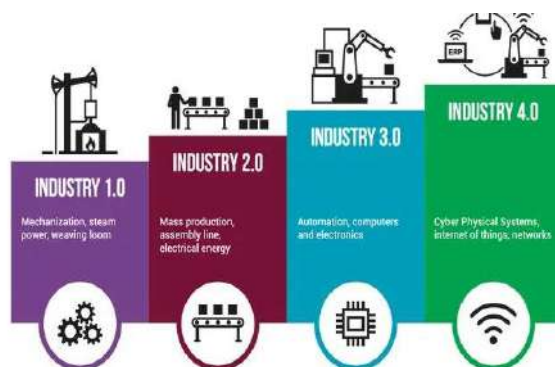
Cloud forest bonds:

- Cloud Forest Bond will incentivise governments to **protect** their cloud forests — forests that are on top tropical mountains, largely shrouded in mist.
- Cloud forest bonds will provide governments with financial actors like philanthropy, public finance and private investment to capture the economic value of the ecosystem services of the cloud forests.
- Such a tool will **encourage carbon storage** and provide funding to set up sovereign-level carbon finance schemes as well as payments for **ecosystem services**
- The report proposes to **mobilise financing** for cloud forest protection through payments schemes under which hydropower projects and other industrial water users benefiting from cloud forests pay for this service.
- While these investments must conform to rigorous social and environmental impact safeguards, ensuring the protection of these forests upstream should be included as a risk management priority for investors, project developers and policy-makers.
- The Cloud Forest Bonds will allow the developing countries to **improve their debt position** and fund the creation of new, long-term income streams from services provided by nature.
- These bonds can be in the form of **new bond issuances, debt-swaps and results-based financing instruments**, which are matched to the circumstances of each of the twenty-five countries.
- Forest protection is highest where **land ownership rights of indigenous peoples and local communities are fully recognised** and exercised – by providing a fair share of the benefits from forest carbon and water revenues
- A **Cloud Forest 25 (CF25) Investment Initiative** to establish a collective of all 25 countries that have high cloud forest to accelerate the international application of market templates and aggregate the blended finance and data needed to achieve solutions at scale.

Industrial Revolution 4.0

Context: The World Economic Forum (WEF) has chosen Hyderabad for establishing its Centre for the Fourth Industrial Revolution focused on healthcare and life sciences. C4IR Telangana will be the 18th centre to join WEF's Fourth Industrial Revolution (4IR) network that spans four continents.

- The first industrial revolution **used water and steam power to mechanise production (the 1800s).**
- The second used **electric power to create mass production** (the early 1900s).
- The third **used electronics and information technology** to automate production (the late 1900s).



About Industrial Revolution 4.0:

- The term '**Industry 4.0**' was coined by the **German government in 2011.**
- Industry 4.0 refers to a new phase in the Industrial Revolution that **focuses heavily on interconnectivity, automation, machine learning, and real-time data.**



- Industry 4.0, which encompasses **IoT and smart manufacturing, marries physical production and operations with smart digital technology, machine learning, and big data**.
- Industry 4.0 comes into play when every company and organization operating today is different, they all face a common challenge—the need for connectedness and access to real-time **insights across processes, partners, products, and people**.

Industry 4.0 Technologies:



Significance of Industrial Revolution 4.0:

- It has the potential to raise global income levels and improve the quality of life for populations around the world.
- It will also lead to a **supply-side miracle, with long-term gains in efficiency and productivity**.
- **Transportation and communication costs will drop, logistics and global supply chains will become more effective, and the cost of trade will diminish, all of which will open new markets and drive economic growth.**
- Governments will gain new technological powers to increase their control over populations, based on pervasive surveillance systems and the ability to control digital infrastructure.
- Advances in technology will create the potential to reduce the scale or impact of violence, through the **development of new modes of protection, for example, or greater precision in targeting**.



Challenges of IR 4.0:

- The **immediate fear is that of job loss**, particularly in the **informal sector**.
- It could yield greater inequality, particularly in **its potential to disrupt labor markets**.
- Besides all these, there are several other **critical concerns surrounding safety, ethics, and the short- and long-term socio-economic impact** that remain unanswered.
- There is a growing concern that **the existing fallacies in humans might only get more accentuated after 4IR**.
- There are several studies that show how **facial recognition technologies** have a higher chance of **misidentifying African and Asian people** compared to their Western counterparts. It is also going to be skewed as developing and least developed countries lack the data framework and infrastructure.
- It will also profoundly **impact the nature of national and international security**, affecting both the probability and the nature of the conflict. This will lead to new fears.
- One of the greatest individual challenges posed by new information technologies is privacy.

Status in India:

- India is moving towards becoming a hub of global manufacturing, **3D printing, machine learning, data analytics, and IoT are key to promoting industrial growth**,
- In November 2020, the **Modern Coach Factory (MCF)** at Raebareli, Uttar Pradesh, rolled out smart railway coaches that are fitted with a battery of sensors to provide a comfortable experience to passengers.

- In May 2020, the Union Ministry of Heavy Industries launched the **Smart Advanced Manufacturing and Rapid Transformation Hub (SAMARTH) scheme**, which brings together manufacturers, vendors, and customers to make them aware of 4IR technologies.
- In 2022's budget speech, the Union finance minister announced a slew of new 4IR-driven projects, including **Drone Shakti**, to encourage start-ups that will facilitate the use of drone services.
- India even has a **4IR centre in Mumbai run by WEF**, which is closely working with several state governments.
- The Centre has recently come up with the **Fourth Industrial Revolution for Sustainable Transformation (FIRST) Cancer Care model** in which 4IR technologies would be used to provide better healthcare for cancer patients
- In February 2022, Government launched the **pan-India 3D maps programme by Genesys International for the 100 smart cities**.
- The company plans to map an entire city in intricate detail so that many 4IR revolution technology-based projects, such as driverless cars, will become easier to implement.

Way Forward:

- Industry 4.0 has started to make an influence in manufacturing and other various sectors in India.
 - Data-driven decision-making is getting implemented in numerous fields.
- Though certain steps have already been taken, a lot of work needs to be done.
- Instead of just spending more capital, the emphasis must be on increasing the current asset base.
- The implementation of smart manufacturing, data analytics, and the Internet of Things will give a positive direction to Indian industries.
- To secure India's active involvement in the fourth industrial revolution, it will be necessary to restructure some vital domestic industries and strengthen institutional capability.

Blockchain technology in Agricultural sector to promote sustainable growth

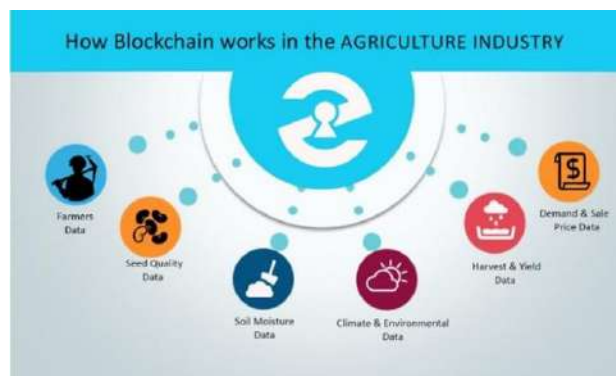
Context: Recently, the government plans to use the technology across all export-driven crops to increase the country's food shipments and incentivise farmers to take up chemical-free processes. India's natural farming could soon get a technological push through blockchain.

About Blockchain technology:

- Blockchain is a shared, immutable ledger that facilitates the process of recording transactions and tracking assets in a business network.
- An asset can be tangible (a house, car, cash, land) or intangible (intellectual property, patents, copyrights, branding).
- Virtually anything of value can be tracked and traded on a blockchain network, reducing risk and cutting costs for all involved.
- It distributes privileges to all network members rather than having a single server and administrator.
- Multiple parties can then access and validate new database additions, increasing security and lowering the risk of corruption.

Applications of Blockchain in Agriculture:

- **Food Supply Chain:** Due to the sheer pressures of globalisation, the agricultural food supply chain has become longer and more intensive than ever before. Blockchain technology contributes to the resolution of many of these challenges by facilitating the establishment of trust between producers and customers.
- **Agricultural Insurance:** Farmers can choose from a variety of insurance policies that differ in terms of how losses are calculated and pay-outs are made.
- **Smart farming:** It incorporates elements such as ICT, the internet of things (IoT), different sensors, machine learning technologies, and a plethora of data analysis and collection equipment such as unmanned aerial vehicles.
- **Transactions of Agricultural Products:** With the use of blockchain technology, the acquisition and selling of agricultural products on ecommerce sites may be substantially accelerated.



Advantages of Blockchain in Agriculture:

- **Supply chain transparency:** The data can improve supply chain transparency and eliminate concerns associated with illegal and unethical operations.
- **Recall:** In the case of a recall, they can also make it easier to track any contamination or other issues back to their source.
- **Food security:** The primary goals of these technologies are sustainability and food security.
- **Transparency:** When consumers have this amount of transparency, they can make informed purchasing decisions.
- **Information:** Blockchain technologies can track all types of information about plants, such as seed quality, and crop growth, and even generate a record of the journey of the plant after it leaves the farm.
- **Reward:** This can be utilised to reward farmers and producers that implement good farming methods.
- **It is easy and simple to discover and report instances of blockchain failures or fraud:** The usage of smart contracts also makes it easy to report any problems in real time.
- The absence of a central authority figure alters the nature of the transaction's trust. Rather than relying on an authority, confidence is placed in peer-to-peer systems and cryptography.

Disadvantages of Blockchain in Agriculture:

- **Misuse:** Concerns have been raised that blockchain technology could be misapplied or misused, putting food security at risk.
 - For example, privately held blockchains are easier to hack and less secure.
- **Lack of research:** Many issues must be resolved before blockchain technology can be completely incorporated into agriculture.
 - Implementation must enable sustainable and equitable food systems, allowing consumers to make a better decision.
- **Small-scale farmers:** who lack the necessary size, technological know-how, and scalability to take advantage of blockchain technology, may be left behind.

- **Farmers that cannot afford blockchain face a significant hurdle to adoption:** While setting up the ledger is very affordable, the process of collecting data may be time consuming and costly.

Way Forward:

- Those who lack the digital literacy required to engage in blockchain technology must be educated through campaigns like **#knowblockchainstech**.
 - This is part of the system's decentralisation process.
 - Because of aged infrastructure and a lack of digital literacy, the world's poor may be unable to participate.
- Blockchain implementation must be decentralised to accommodate small farmers and rural dwellers which will further strengthen food security.
- It can improve security by prohibiting unethical crop production and distribution, which endangers farmers' livelihoods.
- The Consumers will be able to make more educated decisions due to blockchain's data collection, and they may even be able to help small-scale farmers who are often in need of food and financial security.

Role of Digital Banks in Financial Inclusion

Context: Recently NITI Aayog published a discussion paper titled **"Digital Banks: A Proposal for Licensing & Regulatory Regime for India"**, which explained the value proposition of full-stack digital banks and laid down an implementation plan.

- The reason behind the advocacy of full-stack digital banks is the **lack of credit penetration among MSMEs and the full-stack digital banks** are a potential solution for the persistent policy challenge of credit deepening and are seen as **"the next stage of financial inclusion"**.

About Digital Bank:

- A digital bank would be a bank defined in the **Banking Regulation Act, 1949**, and shall **have its own balance sheet and legal existence**.
- It is banking done through the **digital platform, doing away with all the paperwork like cheques, pay-in slips, Demand Drafts, and so on**.
- It means **availability of all banking activities online**.
- The shift from **traditional to digital banking** has been gradual and remains ongoing, and is constituted by differing degrees of banking service digitization.

Difference between Digital Banks and Digital Banking Units:

- Digital banks are financial institutions that have **no physical branches and offer banking services entirely online** through their website and mobile banking app.
- Digital banks will be **completely independent banks** to be licensed under the **Banking Regulation Act, 1949**, and **they will follow the Reserve Bank norms on par with commercial banks**.
- While **Digital Banking Units do not have legal personality and are not separately licensed under the Act**.

Significance of Digital Banking:

- The flow of credit will improve in the rural areas.

- Poor will get easier access to money and loans.
- The establishment of these units will be cheaper than the conventional brick and mortar units.
- They will provide better technical support to customers.
- Digital Units will decrease the manpower requirement.
- For the scheduled banks, they will ensure steady profits.
- DBUs will help the government enhance digital literacy.

Challenges of Digital Banking:

- The limitations of DBU include low public awareness and internet penetration in lower-tier cities.
- Digital banking forums are prone to vulnerabilities and hacks such as phishing, pharming, identity theft, and keylogging.
- Huge investment needed: Banking institutions are investing a lot in their security systems.

Way Forward:

Digital banks are best suited to usage of new age techniques like predictive analyses and artificial intelligence (AI) to arrive at real time decisions for time-busy MSMEs and Individuals at large. These technologies allow banks to move from traditional funding methods based on collaterals to advanced cash flow lending.

Digital banks can rethink and retool lending mechanism, credit underwriting process and gradually shun security-oriented lending. All that which has been done to payments ecosystem in India needs to be replicated in the field of credit assessment and delivery which will further enhance financial inclusion in the country.

Natural Farming

Context: There is an urgent need to scale up alternative approaches of farming since, the negative impact of the Green Revolution has been heightened further by the pandemic. Natural farming needs to be practised on scale and in areas that do not impact food security. However, the natural farming in India has persistent uncertainties, making it an emotive issue.

About Natural Farming:

- It was introduced by Masanobu Fukuoka, a Japanese farmer and philosopher, in his 1975 book The One-Straw Revolution.
- Natural farming is a method of chemical-free agriculture drawing from traditional Indian practices.
- It is a unique model that relies on Agro-ecology aiming to bring down the cost of production and boost the return to a sustainable level.

Features of Natural Farming:

- **Chemical Free:** Natural farming refers to the type of agriculture in which the use of chemicals like pesticides, fertilisers, growth regulators, food additives, genetically modified organisms are entirely shunned.
- **Use of Alternatives Systems:** In place of chemical based inputs, natural farming utilises methods like crop rotation, use of green manures and compost, biological pest control and mechanical cultivation.

- **Additional Practices:** Natural farming systems can be complemented with practices like crop rotation (planting different crops sequentially), mulching (see inset), intercropping (planting different crops simultaneously in a field) and seed soaking with liquid manure, to increase the yields in a field.

Significance of Natural Farming:

- **Soil Health:** Natural farming leads to better soil health as it does not deplete the macro-nutrients (nitrogen, phosphorus and potassium) and micro-nutrients (iron, manganese, zinc and copper), organic carbon as well as rhizosphere microbiome in the soil, unlike the conventional chemical-based practices.
- **Environment:** Natural farming leads to lesser carbon emissions, in addition to promoting carbon sequestration. It also promotes soil respiration, growth of beneficial organisms like earthworms, soil enzymes and microbial biomass increase.
- **Crop Yield:** Natural farming is more productive as compared to chemical-based farming.
- **Reduction in the Costs:** As the inputs are produced by the farmers on the farm itself, the costs would be decreased substantially.
- **Water-use efficiency:** Use of natural methods of farming leads to more efficient use of soil moisture, leading to an increase in the levels of water table, prevents over-extraction of groundwater and promotes aquifer recharge.
- **Food Quality:** It promotes the growth of nutrient content and improves the physical attributes of vegetables like tomato, cabbage and cowpea, fetching better prices in the market.
- **Income and Livelihood:** This approach not only leads to minimise cost of cultivation (as inputs are produced on-field), it also fetches a premium price for the produce.

Challenges to Natural Farming:

- **Yields drop:** India's first organic state, Sikkim, has started seeing decline in its yields after a few years.
- **Conviction among Policy Makers:** As of now, policy makers fear for the food security of the nation and are non-committal on any major changes in the agriculture sector.
- **Resistance by the Chemical inputs-based industry:** The chemical-based farming has a strong backing in the form of multi-million dollar agro-chemical industry, which has fought tooth and nail to sustain the application of chemicals in agriculture.
- **Lack of Consensus among the Scientific community:** Though agreeing to its health and environmental benefits, the scientific community is divided on the impact of natural agriculture on crop yields.

Government Initiatives to promote Natural farming:

- **Policy on Organic Farming 2005:** The policy was launched in 2005 under the aegis of the Ministry of Agriculture and Farmers' Welfare.
 - It seeks to promote organic farming and conserve bio-resources, resulting in strengthening of rural economy, promotion of value addition, sustaining soil fertility and accelerating growth of agri-businesses in the country.
- **Paramparagat Krishi Vikas Yojana:** It is a sub-component of Soil Health Management under National Mission of Sustainable Agriculture.

- It primarily aims at developing healthy agriculture models through a mix of traditional wisdom and modern scientific advancements. It also seeks to promote soil fertility build-up, resource conservation and climate change mitigation
- **Mass movement:** Recently, the PM of India has made an appeal to the farmers of the nation, to make organic farming a mass movement in the country.

Carbon Trading in the Agriculture Sector

Context: Recently, The Union Ministry of Power has notified the implementation of the Energy Conservation (Amendment) Act, 2022, from January 1, 2023. The amendment empowers the Union government to lay down a carbon credit certificates trading scheme in India.

About Carbon Trading and Carbon Credit:

- Carbon trading is a market-based system that aims to offer financial incentives to persuade enterprises to lessen their environmental footprint.
- In contrast to voluntary offsets, which allow consumers to pay to offset their carbon impact, carbon trading is a legally binding scheme.
- Carbon trading seeks to place a price on CO₂ using the caps and trade principle and is calculated by individual governments and policymakers.
- The amount of emissions that are allowed for each carbon-producing industry, such as the power sector, the automobile industry, and air travel, is capped by the government.

Carbon Credit:

- A carbon credit is a kind of tradable permit that, per United Nations standards, equals one tonne of carbon dioxide removed, reduced, or sequestered from the atmosphere.
- Carbon allowances or caps, meanwhile, are determined by countries or governments according to their emission reduction targets.



Significance of Carbon Credit:

- Carbon credits allow **carbon dioxide emissions** to be traded as a commodity in the market which **compensates sellers for investing in emission reduction practices** and thus incentivises the **net reduction of carbon dioxide in the atmosphere**.
- Corporations that cannot directly reduce their **GHG emissions** can offset their **emissions indirectly by purchasing carbon credits** from other individuals and entities.
- As the significance of climate and sustainability increases for countries, **investors (especially ESG-driven investments), employees, and customers' demand for these credits is also expected to significantly increase**.
- Various practices could be eligible for earning carbon credits, including renewable energy, afforestation, ecological restoration, agriculture, waste management, etc.

Advantages of carbon credit in Agricultural Sector:

- Carbon credits could be generated in agriculture based on carbon dioxide sequestered and stored by the soil from the atmosphere as well as the reduction in carbon dioxide emissions during the cultivation process from ploughing to the management of stubble.
 - For instance, various activities related to agriculture such as **tilling of fields before sowing seeds, use of chemical fertilizers, stubble burning, etc. result in carbon dioxide emissions.**
- Agriculture is also the **biggest contributor to GHG emissions** within the entire food system.
 - Being a major source of emissions, agriculture could also serve as an important **sink to store carbon and thus reduce**, avoid or sequester carbon dioxide emissions.
- The improvement in the **carbon-storing capacity of the soil** could improve fertility, **crop yields, farmers' income, water conservation**, etc., thereby aiding in making agriculture resilient in the long run.
 - **Use of the direct-seeding method** to cultivate **rice instead of transplantation of saplings** in flooded fields can **reduce methane emissions** (generated from bacteria in flooded fields) and **water consumption, and also improve soil nutrition.**
- The promotion of similar practices could help in reducing emissions and providing carbon credits to farmers.
 - Farmers can then **sell these credits in the market and earn additional income**, thus further incentivising them to implement such activities and improve soil carbon.
- Encouraging activities like **zero-tilling agriculture, agroforestry, improved water management, crop diversification and reduced use of chemical fertilizers** can improve soil health and its capacity to store carbon.
 - It is estimated that soil carbon sequestration is a cost-effective measure to mitigate climate change and can sequester around 2.6 gigaton emissions per year.

Challenges for Carbon credit in the Agriculture sector:

- This nascent level of agricultural carbon trading can be attributed to various reasons such as –
 - Low level of stakeholder awareness
 - Low level of methodology for determination of emissions reduced, avoided, or sequestered due to agriculture activities
 - Non-permanence of carbon sequestered in the soil
 - Verification of the quality of carbon credits
 - Monitoring of underlying projects,
- Determination of the **fair value of carbon credits** to incentivise farmers to adopt sustainable practices etc.
- The **average landholding size of an Indian farmer is just over one hectare.**
 - Therefore, the amount of carbon credits received may not be enough for a small farmer to adopt regenerative agriculture practices.
- **Low Participation of Agriculture Sector:**
 - The carbon credits conceptually seem encouraging for climate change and agriculture but there is low participation of the agricultural sector in carbon trading markets.
 - For example, as per the **Berkeley Carbon Trading Project**, agricultural activities accounted for **only 1 per cent of all carbon credits issued for emissions reduction projects in 2021.**

Way Forward:

Farmers need to be made aware of the existence and benefits of carbon credit programmes, so that all farmers practicing regenerative agriculture can benefit from it. Need of a streamlined policy to

address these challenges which will help in expanding the currently under-utilized space for carbon credit trading from commercial agriculture.

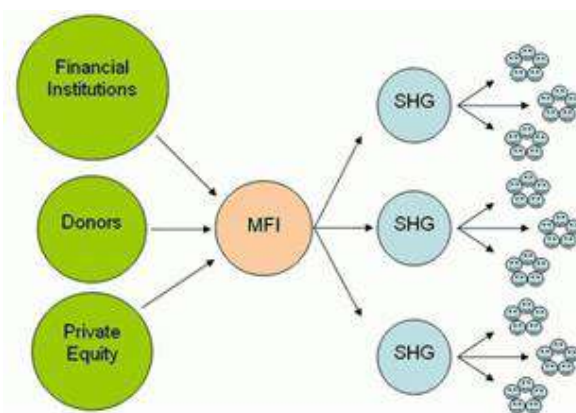
Thus the governments at the state and central level could attempt to align existing natural farming, regenerative farming, and organic farming schemes so as to nudge farmers to participate in carbon credit programmes along with the associated organizations.

Role of Microfinance Institutions in the Financial Inclusion and Economic growth

Context: With the Insurance Regulatory and Development Authority of India (Irdai) increasing the maximum number of tie-ups for corporate agents and insurance marketing firms, insurance companies are approaching microfinance institutions for partnerships to leverage their last-mile connectivity for deeper penetration into the rural market.

About Microfinance and Microfinance Institutions:

- Microfinance is a **form of financial service which provides small loans and other financial services to poor and low-income households.**
- The definition of “small loans” varies between countries.
- In India, **all loans that are below Rs. 1 lakh can be considered as microloans.**
- Microcredit is delivered through a variety of institutional channels viz:
 - Scheduled commercial banks (SCBs) (including small finance banks (SFBs) and regional rural banks (RRBs)).
 - Cooperative banks.
 - Non-banking financial companies (NBFCs).
- Microfinance institutions (MFIs) registered as **NBFCs as well as in other forms.**
- MFIs are financial companies that provide **small loans to people who do not have any access to banking facilities.**
- MFI promotes financial inclusion which enables the **poor and low-income households to come out of poverty**, increase their income levels and improve overall living standards.
- It can facilitate **achievement of national policies** that **target poverty reduction, women empowerment, assistance to vulnerable groups, and improvement in the standards of living.**



Significance of Microfinance Institutions:

- It makes credit available easily thereby bettering the income and employment scenario.
- It helps in serving the under-financed sections such as women, unemployed people and those with disabilities.
- It helps low-income households to stabilize their income flows and save for future needs.
- In good times, microfinance helps families and small businesses to prosper, and at times of crisis it can help them cope and rebuild.
- Families benefiting from microloans are more likely to provide better and continued education for their children.

Challenges of MFI:

- **Inadequate Data:** Despite the fact that total loan accounts have been rising, it is unclear how these loans will actually affect clients' levels of poverty because the available information is dispersed.
- **Over-indebtedness:** The two main issues that are straining the microfinance sector in India are the expanding trend of consumers taking out multiple loans and ineffective risk management.
 - The microfinance industry offers loans with no security, which raises the possibility of bad debts.
- **Eroding social objective:** The social goal of MFIs—to enhance the lives of society's marginalised groups—seems to have been weakening over time as they pursue development and profitability.
- **Regulatory Issues:** Microfinance institutions have entirely different needs and organisational structures than other traditional lending institutions.
 - The microfinance sector is finding it difficult to survive due to a lack of an adequate regulatory framework.
- **Poor structuring of organization:** Lack of standardised data and fraud management system creates more NPAs and affects the credibility of the institution.
- **Lending for Non-income Generating Purposes:** The percentage of loans used for non-income generating purposes may be significantly greater than the RBI's limit of 30% of the MFI's total loans.

Way Forward:

MFIs should concentrate on developing a scalable and sustainable microfinance strategy with a clear mission for both economic and social welfare. The microfinance institutions should be encouraged by RBI to use a **"social impact scorecard"** to track their social impact. Best usage of technological integration will be able to assist MFIs in providing services as well as repayment collection processes.



INTERNATIONAL RELATIONS



India-Egypt relations

Context: India and Egypt, two of the world's oldest civilizations, have enjoyed a history of close contact from ancient times. Ashoka's edicts refer to his relations with Egypt under Ptolemy-II.

- President of Egypt, Abdel Fattah El-Sisi, will arrive in New Delhi as a Chief Guest on India's 74th Republic Day.
- India and Egypt are celebrating 75 years of establishment of diplomatic relations this year and Egypt has also been invited as a 'Guest Country' during India's Presidency of G-20 in 2022-23.

Bilateral Relations

- India and Egypt enjoy warm and friendly relations marked by civilizational, cultural, and economic linkages and deep-rooted people-to-people ties.
- The two countries work closely at multilateral and international platforms.
- The Egyptian President visited India in October 2015 to participate in the third India Africa Forum Summit and in September 2016 on a State Visit.

Political relations

- The joint announcement of establishment of diplomatic relations at Ambassadorial level was made in 1947.
- With regard to covid pandemic, Egypt dispatched three planes with medical supplies to India in 2021.
- In addition, Embassy of India also signed an agreement to procure 300,000 doses of REMDESEVIR from M/s EVA Pharma, Egypt
- India-LAS Engagement: The 3rd Meeting of the Arab-India Cooperation Forum took place virtually in 2021.
- The discussions focused on issues of mutual concern on both regional and international levels, collaboration in the field of diagnostics and treatment to fight the Covid-19 pandemic and increasing cooperation in the fields of economy, trade and investment, energy and environment, agriculture and food security, science and technology, media, human resource development etc
- **Operation Sankalp**, which saw the Indian Navy escort oil tankers through the Strait of Hormuz as tensions between Saudi Arabia and Iran escalated, was a good example of India's mandate in the region moving up from anti-piracy operations to overt protection of national assets and interests.

Trade: Bilateral trade between India and Egypt achieved a record high of 7.26 billion dollars in 2021-22.

- The trade was fairly balanced, with 3.74 billion Indian exports to Egypt and 3.52 billion imports from Egypt to India.
- The India-Egypt Bilateral Trade Agreement has been in operation since March 1978 and is based on the Most Favoured Nation clause

Investment: More than 50 Indian companies have invested around 3.15 billion dollars in diverse sectors of the Egyptian economy, including chemicals, energy, textile, garment, agri-business, and retail.

- Egyptian investments in India are to the tune of US\$ 37 million which include smart electrometers, car paints, I.T Services, etc.
- The grants-in-aid projects include: Pan Africa Tele-medicine and Tele-education project in Alexandria University, Solar electrification project in Agaween village and Vocational Training Centre for textile technology in Shoubra, Cairo, which have been completed.

Science and Technology: The 'Science & Technology' cooperation is implemented through biennial Executive Programmes and Scientific Cooperation Programme between CSIR (India) and NRC (Egypt).

- The first Joint Working Group on Cyber Issues was held in New Delhi in 2016.
- The 4th Joint Committee Meeting on S&T was held in New Delhi in 2017.
- The 2nd ISRO-NARSS JWG was held in Cairo in 2017.
- The India-Egypt Workshops on Agriculture-Biotechnology and Nanotechnology were held in Shillong in 2018 and in Mumbai in 2019 respectively.
- An IT Centre in Al Azhar University, CEIT, is also operational since February 2019.

Defence

- Most of the current defence cooperation is determined by Joint Defence Committee (JDC) activities.
- The 8th Joint Defence Committee (JDC) was held in New Delhi in 2018
- The 9th JDC was held in Cairo from in 2019.
- IAF pilots had trained Egyptian pilots from 1960s until 1984.
- In the recent past, since 2015, there have been several high-level exchange of visits by defense delegations including the visit of the Minister of Defense of Egypt, General Sedki Sobhi, in 2017 and the visit of Minister of Defense of Indian, Smt. Nirmala Sitharaman, in 2018.
- The **first ever joint exercise** between the special forces of the Indian Army and the Egyptian Army named "Exercise Cyclone-I" is in progress at Jaisalmer in Rajasthan since January 2023.

Suggestions for future:

- **Economic partnership** – Egypt is in economic flux and requires an urgent infusion of capital to avoid any long-term economic distress.
- Example: Arab Spring, which was backed by people's anger against economic destitution, cronyism and corruption.
- **Russia's war on Ukraine** – led to a commodity crunch, specifically in the agriculture sector like critical wheat imports – India may come out as a viable alternative.
- **Security perspective** – An outreach to Egypt is part of its larger construct of a security architecture in West Asia, particularly the Gulf including UAE, arguably the most powerful leader in the region today.
- **Energy security** is set to become even more precarious over the next few years, India's naval and aerial military engagements through the mechanism of joint exercises should also see an uptick.
- **Trade cooperation** – such as the Suez Canal is critical for India as part of international trade systems.

Way forward

- India-Egypt ties in their current stage will require time and honing to lead to more concrete strategic posture.
- The opening with defence exercises is also a good platform to further develop access to fulfil Egypt's defence requirements.
- While the entire saga of India wanting to sell its HAL Tejas jets to Egypt was an over-ambitious and unrealistic endeavour, promoting defence along with agriculture, Information Technology, amongst others as areas of cooperation can benefit Cairo as it looks to diversify its economic footprint.

Trade pact with GCC

Context: Despite the Gulf region being home to the largest Indian expatriate community with long-standing relations, its enormous economic potential remains unexplored.

- India is currently facing a trade deficit with Gulf Cooperation Council (GCC) nations.
- India's trade deficit with GCC soared from \$13.4 billion in 2016-17 to \$66.8 billion in 2021-22.
- Mutually beneficial trade pact with GCC may become the solution to India's current deficit problem.



About GCC:

- The Cooperation Council for the **Arab States of the Gulf, known as the Gulf Cooperation Council (GCC)**, is a regional and economic union established in 1981.
- Members: **Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates**
- Headquarters: **Riyadh, Saudi Arabia.**
- **The official language is Arabic.**
- It aims to achieve unity among its members based on their common objectives and their similar political and cultural identities, **which are rooted in Arab and Islamic cultures.**
- Out of 32 million non-resident Indians (NRIs), nearly half are estimated to be working in GCC countries.
- According to World Bank, **India got \$87 billion in foreign remittances in 2021.**
 - A noticeable portion came from the GCC nations.

India- Gulf Cooperation Council (GCC)

Significance of GCC:

- GCC provides for India's energy security, while India ensures their food security.
- India and the GCC need to go beyond the traditional Free Trade Agreement (FTA) and include investments and services as a part of a comprehensive economic partnership.
- Under the **Comprehensive Economic Partnership Agreement (CEPA)**, Indian merchandise got preferential market access to the **UAE on over 97 % of its tariff lines accounting for 99 % of India's exports** to the UAE in value terms largely for labour-intensive exports.
- Early and effective implementation of CEPAs will provide a boost to India and GCC countries.

- The GCC pact aims to boost economic ties between the two regions.
- This pact can help **India to balance the trade deficit with GCC countries** and will provide a market for Indian exports.

Economic and Commercial Relations

- India's old, historical ties with the GCC States, coupled with increasing imports of oil and gas, growing trade and investment, and the presence of approximately 6.5 million Indian workers in the region, are of vital interest to India.
- The Gulf countries provide an excellent market potential for **India's manufactured goods and services, especially in project services exports.**
 - Around 10 million Indians live across the Gulf, sending remittances of about \$45 billion annually on average, according to certain estimates.
- According to a **World Bank report**, India was the **largest recipient of remittances** in the world in 2021, receiving around \$87 billion, approximately 50 percent of which came from the Gulf.
- According to **India's Ministry of Commerce** showed that India's exports to the GCC countries in 2021-22 increased to about USD 44 billion as against USD 27.8 billion in 2020-21, a growth of over 58 percent.
 - This accounted for 10.4 percent of India's total exports in 2021-22.
- On the import front, India witnessed a rise of 85.8 percent compared to 2020-21, with total imports summing up to USD 110.73 billion, **accounting for 18 percent of India's total imports.**

Strategic Relations: From a strategic point of view, India and GCC share the goal of political stability and security in the region.

- The common political and security concerns of India and GCC include cross-border terrorism in the Gulf region and South Asia.
 - The emerging common security perceptions create further opportunities for GCC-India cooperation in the future.
- The GCC States are going through important changes and transformations; the process of understanding and integration is coming of age.
 - Along with it the areas for cooperation are also widening beyond investments, trade and commerce, and sharing & development of human resources to security.
- **India-GCC Industrial Conference:** The first GCC-India Industrial Conference was held in Mumbai in February 2004, the second was held in Muscat in March 2006, the third was held in Mumbai in May 2007 and the fourth was held at King Abdullah Economic City, Jeddah in November 2015.
- **India- GCC Free Trade Agreement:** India and GCC signed a Framework Agreement for enhancing and developing economic cooperation between the two sides in New Delhi in August 2004.
 - Two rounds of talks for finalizing aspects like tariff rules, rules of origin, etc have been held. The India-GCC FTA is under negotiation.

India's trade with other GCC countries:

- **Saudi Arabia:**
 - At a total volume of USD 42.9 billion in 2021-22, Saudi Arabia was India's fourth-largest trading partner.
 - Imports from Saudi Arabia were the fourth largest at USD 34.1 billion (7%), up 50% from the previous year. Most of it was crude oil.
 - It was India's fifth-largest trading partner in 2021-22 at USD 34.3 billion.

- **UAE:**
 - The UAE was India's third-largest trading partner in 2021-2022, and the second-largest for both exports (USD 28 billion) and imports (USD 45 billion) when these are counted individually.
- Qatar accounts for 41% of India's total natural gas imports.
- For Oman, India was the 3rd largest (after UAE and China) source for its imports and the 3rd largest market (after UAE and Saudi Arabia) for its non-oil exports in 2019.

India-Qatar Start-Up Bridge:

- The Vice President launched the "India-Qatar Start-Up bridge" that aims to link the start-up ecosystems of the two countries.
- India has emerged as the 3rd largest ecosystem for startups globally, with over 70,000 registered Startups.
- India is home to 100 unicorns with a total valuation of over USD 300 billion.

Way Forward:

India needs to focus on long-term plans for economic cooperation with GCC, beyond oil, GCC countries are also revolutionizing green energy. India can promote its green hydrogen mission in cooperation with GCC countries. Other projects including renewable energy, higher education, technological innovation, smart cities, and space commerce are the areas GCC and India can diversify their cooperation.



HISTORY AND ART & CULTURE



Swami Vivekananda

Context: January 12 2023 marks the 161st birth anniversary of Swami Vivekananda

- It is observed as National Youth Day.
- His message of love, compassion and universal acceptance is as relevant today as it was when he first delivered it over a hundred years ago.

Swami Vivekananda:

- Named Narendra Nath Datta, Swami Vivekananda was an Indian monk who is known for his **intellectual contributions to the field of religion**.
- A chief disciple of Ramakrishna Paramhansa, Vivekananda is known to have introduced Hindu philosophies of **Yoga and Vedanta** to the western world.
- He is remembered as the founder of the **Ramakrishna Mission** and the Ramakrishna Math.
- His best known presence in the West is his **speech at the Parliament of the world's religions in 1893** where he introduced the basic concepts of Hinduism to an international audience.
- After this session at Chicago, Vivekananda toured around several parts of USA and UK, spreading philosophies on religion.
- The aspect of Hinduism that Vivekananda represented is known as '**neo-Vedanta**' which is an interpretation of Hinduism through a Western esoteric lens.
- He died on July 4, 1902, while he was meditating.
- Subhas Chandra Bose had once remarked that Vivekananda was the "**maker of modern India**."

Books: Raja Yoga, Karma Yoga, Meditation and Its Methods, Vedanta: Voice of Freedom, Lectures on Bhagavad Gita, My India: The India Eternal, Powers of The Mind, Essentials of Hinduism, Living at the Source, My Idea of Education, Work and Its Secret, To the Youth of India, Pearls of Wisdom, Women of India, Life after Death, The East and the West and Religion of Love.

Significance of his teachings:

He emphasised on the importance of **Religious acceptance**

- He emphasised that religion is a topic of experience and peace can only last if people understand the **real meaning of religion, practise** it in their daily lives and feel one with it.
- He preached that the essential **unity** of all human beings can be realised are unconditional love for all, judicious detachment, and expansion of self through service of fellow humans despite any sectarian difference
- He taught to not shy away from **taking responsibility for one's actions**
- **Education** was the primary means for empowering the people – to equip people for the struggle for life, to bring out strength of character, a spirit of philanthropy, and the courage of a lion.
- His vision also gave rise to the idea of **Antyodaya** – Until the upliftment of the last poor person in the country is ensured, development is meaningless.
- Swami Vivekananda combined thinking of different religions, communities and traditions to inspire **liberation from inertia**.

Way forward:

- Government of India sanctioned a **“Value Education Project”** of the Ramakrishna Mission to help to inculcate in children a **moral compass** and a value system against the tide of commercialism and consumerism that is sweeping our societies.
- The Government has embarked on the mission of building a united, strong and modern India to fulfil the vision of the great thinkers like Vivekananda.
- Such as **“Ek Bharat, Shreshtha Bharat”**, following the principle of **“Sabka Saath, Sabka Vikas”**.

India’s Cultural Renaissance – Kashi Tamil Sangamam

Context: The month-long Kashi Tamil Sangamam, which showcased Tamil culture, heralded a new era where ancient Indian traditions intermingle with one another and are revitalized with the help of modern practices so that they contribute to cultural and economic growth.

- It gave a rich cultural context to India’s mission to become a developed country by 2047. The event carried forward our tradition of **Ek Bharat Shreshtha Bharat**.

About Kashi Tamil Sangamam:

- The Kashi Tamil Sangamam commemorates a **variety of characteristics of the North and South of India’s shared history and culture**.
- The overarching goal is to strengthen the bonds between the peoples of the North and the South by bringing their respective knowledge systems and cultural traditions closer together.
- It is being put on by **the Ministry of Education in association with the Government of Uttar Pradesh** and other ministries including **Culture, Textiles, Railways, Tourism, Food Processing, Information and Broadcasting**, etc.
- The project is in line with the **National Education Policy (NEP)**, which places a strong emphasis on fusing the **richness of Indian Knowledge Systems** with contemporary knowledge systems by the year 2020.
- The program’s two implementing organisations are **IIT Madras and Banaras Hindu University (BHU)**.

Ancient links associated with the Sangamam:

- Kashi, one of the oldest living cities in the world, and Tamil Nadu, where people proudly speak the **world’s oldest language, are towering pillars of ancient Indian civilization**.
- Both have rich, old arts, music, craftsmanship, philosophy, spirituality, and literary traditions.
- Since ancient times, higher education in Southern India was not considered complete without a visit by the scholar to Kashi.
- People from Rameswaram would take a dip in the **Koti Teertha (in the temple) before visiting Kashi for darshan**, and they would bring back **water (Ganga) from Kashi for abhiseka at the temple in Rameswaram**.
- The government’s initiative to build the **landmark Kashi Vishwanath corridor, which connects the Jyotirlinga with the Ganga**, embellishes traditions with a touch of modernity for the benefit of residents and visitors.

Cultural Significance:

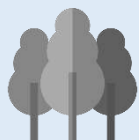
- In order to construct a temple for Lord Shiva, **King Parakrama Pandya of the area around Madurai in the 15th century travelled to Kashi (Uttar Pradesh) and brought back a lingam.**
- He took a break under a tree while travelling back, but when he tried to move on, the cow carrying the lingam stood still.
- When **Parakrama Pandya** realised that this was the Lord's intention, he put the lingam in the area, which later became **known as Sivakasi, Tamil Nadu.**
- The Pandyas had constructed the **Kasi Viswanathar Temple** for devotees who could not go to Kashi at what is now **Tenkasi in southern Tamil Nadu, near to the state's border with Kerala.**

Overall Significance of the Sangamam:

- **Integrating Heritage:** The Sangamam created a unique platform to rediscover and integrate our heritage and ancient knowledge with modern thought, philosophy, technology, and craftsmanship.
 - This creates a new body of knowledge and fosters innovations that will help our artisans, weavers, entrepreneurs, and traders.
 - For instance, Varanasi is well known for **Banarasi silk saris, and Kancheepuram, for its shimmering silk saris.**
 - Weavers and entrepreneurs from both regions have a lot to gain from interacting with each other and from their exposure to modern practices of branding, quality control, marketing, product consistency, the use of modern machinery, and value addition.
- **Facilitation through government policies:** The Sangamam was in step with the entire spectrum of this government's policies.
 - These policies accord top priority to accelerating development with a focus on the welfare of the poorest of the poor, love for Indian culture, and promoting local industries and handicrafts.
- **One District One Product:** The government is strongly promoting the One District One Product scheme that will take Indian products to the world market.
 - The **Prime Minister of India is a brand ambassador for these products and gifts them to world leaders.**
 - Traditional wooden toys of Varanasi are getting more export inquiries and are being showcased in international business exhibitions.
- **Traditional products:** Traditional products will also get a big boost from other government initiatives such as **the Open Network for Digital Commerce and the Government e-Marketplace.**

Way Forward:

Around 2 lakh people visited the campus of the Banaras Hindu University which hosted cultural shows and a popular exhibition that highlighted Tamil products and cuisine. The Sangamam has ignited a **new cultural zeal in India and whetted the country's appetite for more.** The Sangamam is the **beginning of India's cultural renaissance** that is not limited to the bonding of Tamil Nadu and Kashi. It will also extend to all cultures across this **Bharathabhoomi** and make this country **Vasudhaiva Kutumbakam.**



ENVIRONMENT



Eco-sensitive Zones

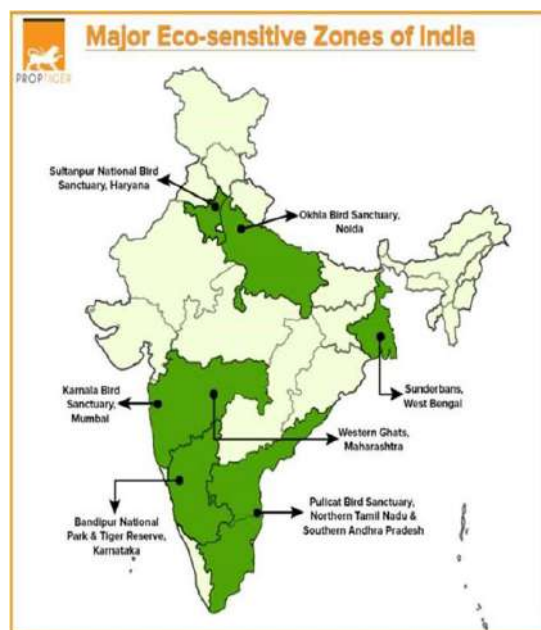
In News: On June 3, a three-judge bench of the Supreme Court heard a PIL which sought to protect forest lands in the Nilgiris in Tamil Nadu, but was later expanded to cover the entire country.

Context: The apex court directed all states to have a **mandatory 1-km ESZ from the demarcated boundaries of every protected forest land, national park and wildlife sanctuary.**

- It also stated that **no new permanent structure or mining** will be permitted within the ESZ.
- Protests erupted across the high ranges of Kerala in response to the apex court's direction, similar to protests triggered by the recommendations of the **Western Ghats Ecology Expert Panel (WGEEP)** led by Madhav Gadgil.

What are Eco-sensitive zones (ESZs):

- As per the **National Wildlife Action Plan (2002-2016)**, issued by the Union Ministry of Environment, Forest and Climate Change, **land within 10 km of the boundaries of national parks and wildlife sanctuaries** is to be notified as **eco-fragile zones** or **Eco-Sensitive Zones (ESZ)**.
- Areas beyond 10-km **can also be notified by the Union government** as ESZs, if they hold larger ecologically important "sensitive corridors."
- They are created as "**shock absorbers**" for the protected areas, to **minimize the negative impact** on the "fragile ecosystems" by **certain human activities** taking place nearby.
- Furthermore, these areas are meant to act as a **transition zone** from areas requiring higher protection to those requiring lesser protection.
- ESZs are **not meant to hamper the daily activities** of people living in the vicinity, but are meant to guard the protected areas and "refine the environment around them".
- **Activities prohibited** are commercial mining, saw mills, commercial use of wood, etc., apart from **regulated** activities like **felling of trees**.
- **Permitted activities** include ongoing **agricultural** or horticultural practices, rainwater harvesting, organic farming, among others.
- Various sections of society in the hill district have participated in public meetings, rallies, and door-to-door campaigns against the buffer zone regime.



Kerala State Remote Sensing and Environment Centre report:

- In its order, the apex court had directed the **Principal Chief Conservator of Forests** of each State and Union Territory (UTs) to draw up a list of **subsisting structures** and other relevant details within the respective ESZs and furnish a report.
- The court also warned that in the event of any State/UT failing to submit a proposal, an area of **10 kilometre** would be considered as buffer zone in respect of such sanctuaries or national parks and restrictions would be imposed in those areas.

Findings:

- The KSRSEC had also reported that **115 villages in Kerala** would come under the buffer zone of the protected areas of the State.
- a total area of **1,588.709 sq. km** would come under ESZs.
- The sanctuaries and national parks in the State are spread over an area of **3,441.207 sq. km**.
- The assessment found that **83 tribal settlements** were located within the ESZs of the State.

Challenges:

- Due to the **high density of human population** near the notified protected areas, farmer's groups and political parties have been demanding that all human settlements be exempt from the ESZ ruling.
- **Fearful farmers** – the settler-farmers living around protected areas have become fearful that ESZ delineation would make farming impossible and they could be gradually evicted from their holdings.
- The ESZ demarcation move became an **emotive issue** for hundreds of farmers in the region who have successfully built their lives and settlements on forest fringes, battling inclement weather and wild beasts.
- **Faulty KSRSEC report** including allegations that the motive behind the survey was to relocate people from the forest fringes and thus expand forest cover in the State.
- The thick and dense canopy **restricts the identification** of all the **subsisting structures** and roads in the visual interpretation process.
- The **price of land has plummeted** following the release of the aerial survey report.
- Landowners worry that this will affect their plans based on the **asset value of their holdings**.
- This may affect the **educational aspirations** of students from rural areas
- **Farmers are already burdened** with fighting wild animal attacks and decreasing prices of agricultural produce

Way forward:

- Kerala is a State sandwiched between the mountains and the sea, hence its ecological sustainability is a delicate subject
- Social changes due to modern environmental discourse in the form of tourism are disturbing the local ecological and social realities, in which the locals play an active role.

- There is a need for rethinking on the impacts of the **environmental policies at the local level**, the type and prospects of **local participation** and most importantly the prospects of **alternate income generating opportunities** for successful conservation initiatives.



SOCIAL ISSUES



OBC Subcategorization

Context:

- The Justice G. Rohini-led commission for the sub-categorisation of other backward classes (OBCs) has now been given yet another extension in its tenure by the President
- This is the 14th extension in tenure that the commission has been given.

About the commission:

- The commission was formed in October 2017.
- It was initially given 12 weeks to finish the task of sub-categorising the nearly 3,000 castes within the OBC umbrella and recommend division of the 27% OBC quota among them equitably
- As part of its work, the commission had identified dominant caste groups among all OBC communities in the Central list, finding that a small group of dominant OBC communities were crowding out a large number of communities from the 27% OBC quota.
- Consequently, the commission decided to divide all OBC communities into four broad categories, with the largest share of the quota pie going to the group that has historically been deprived of OBC quota as a result of being pushed out by dominant OBC groups.

Commission's terms of reference:

- To examine the extent of inequitable distribution of benefits of reservation among the castes or communities included in the broad category of OBCs with reference to such classes included in the Central List.
- To work out the mechanism, criteria, norms and parameters in a scientific approach for sub-categorisation within such OBCs.
- To take up the exercise of identifying the respective castes or communities or sub-castes or synonyms in the Central List of OBCs and classifying them into their respective sub-categories. A fourth term of reference was added on January 22, 2020.
- To study the various entries in the Central List of OBCs and recommend correction of any repetitions, ambiguities, inconsistencies and errors of spelling or transcription.

What is sub-categorisation of OBCs?

- The idea is to create sub-categories within the larger group of OBCs for the purpose of reservation.

- OBCs are granted 27% reservation in jobs and education under the central government, this has been a legal debate for other reservation categories too
- In 2022, a Constitution Bench of the Supreme Court reopened the debate on sub-categorisation of Scheduled Castes and Scheduled Tribes for reservations.
- For OBCs, the debate arises out of the perception that only a few affluent communities among the over 2,600 included in the Central List of OBCs have secured a major part of the 27% reservation.
- The argument for creating sub-categories within OBCs is that it would ensure “equitable distribution” of representation among all OBC communities.
- It was to examine this that the Rohini Commission was constituted on October 2, 2017

Need for subcategorization:

- Due to inequalities and further inequalities within unequal entities.
- Reservation in jobs and education did address socio-economic disparities in India to some degree, but, the benefits of reservation have not been distributed equitably
- Large segments of the weaker sections and backward classes continue to have no access to quality education or meaningful employment.
- The relatively rich and dominant sections among the backward castes have tended to take up a disproportionately larger share of the reservation pie.
- Failure in effectively preventing large sections of the creamy layer from taking advantage of the quota system to the detriment of the poorer sections among their own caste groups.
- To ensure a more equitable distribution of reservation benefits by further differentiating caste groups coming under backward classes on the basis of their levels of social and economic backwardness.
- Lacunae in categorisation of the creamy layer led to the need to differentiate among the caste groups.
- Vote-bank politics has caused prioritising of caste-based categorisation over income-based differentiation to identify reservation beneficiaries.
- The reservation pie is limited, and no group, whether rich or poor, dominant or subservient, can hope to gain except at the expense of another socio-economic category.

Findings of the commission:

CENTRAL GOVT EMPLOYEES BY SOCIAL CATEGORY						
	TOTAL	SC	ST	OBC	EWS	OTHERS
Group-A	50,068	6,440 (12.86%)	2,826 (5.64%)	8,455 (16.88%)	11 (0.02%)	32,226 (64.58%)
Group-B	1,25,732	20,954 (16.66%)	8,244 (6.55%)	19,829 (15.77%)	5 (0.04%)	76,700 (61.0%)
Group-C (excluding safai karmacharis)	3,22,503	58,744 (18.22%)	22,296 (6.91%)	72,710 (22.54%)	84 (0.03%)	1,68,639 (52.29%)
Group-D (safai karmacharis)	13,722	4,507 (32.72%)	1,056 (7.66%)	2,774 (20.14%)	0	5,435 (39.46%)
TOTAL	5,12,075	90,675 (17.70%)	34,422 (6.72%)	1,03,768 (20.26%)	100 (0.02%)	2,83,110 (55.28%)

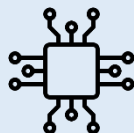
- In 2018, the Commission analysed the data of 1.3 lakh central jobs given under OBC quota over the preceding five years and OBC admissions to central higher education institutions, including universities, IITs, NITs, IIMs and AIIMS, over the preceding three years.
- The findings were: 97% of all jobs and educational seats have gone to just 25% of all sub-castes classified as OBCs; 24.95% of these jobs and seats have gone to just 10 OBC communities; 983 OBC communities — 37% of the total — have zero representation in jobs and educational institutions; 994 OBC sub-castes have a total representation of only 2.68% in recruitment and admissions.
- Total number of Group A to Group C employees (including safai karmacharis) was 5.12 lakh – Of these, 17.70% are SC, 6.72% ST, 20.26% OBC (Other Backward Classes), and 0.02% EWS (Economically Weaker Sections).
- In Group-A, the highest tier among these, the representation of SCs is just 12.86%, of STs 5.64% and of OBCs 16.88%. Reservation for these communities is 15%, 7.5% and 27% respectively.

Challenges

- Disruptions caused by COVID-19 pandemic.
- Different states census underway – Bihar government is in the middle of its caste-based survey in the State and the Uttar Pradesh government is in the process of conducting a fresh survey to assess the need for OBC reservation in its local body elections, with other States like Madhya Pradesh and Maharashtra also looking to form panels to implement OBC reservation in local body polls.
- Government lacks information for data enumeration of OBC.
 - Data from 2011 Socio-Economic Caste Census were never made public.
- Enumeration of OBC data is administratively complex and the information lacks completeness and accuracy since the State and Central list of OBCs are distinct.
- It may lead to breach of apex court's 50-per-cent ceiling, since many communities have sought separate reservations at the State and Central levels across India.

Way forward: According to 2018 data, just ten OBC communities have taken the 25 per cent of reserved central jobs and institutional seats. Also, 97 per cent of the reserved jobs and seats have gone to 25 per cent of OBC sub-castes.

- Hence, there is a need to re-establish equity and the task has been handed over to Rohini Commission
- Once completed, the report by Justice G Rohini commission is also likely to undergo judicial review



SCIENCE & TECHNOLOGY



Self-reliance in defence

Context: AatmaNirbharta” (self-reliance) and “Nari Shakti” (women power) were the two themes on display at the Republic Day parade on Thursday — by many of the marching contingents as well as the different tableaux.

- India ranks fourth among 12 Indo-Pacific nations in self-reliant arms production capabilities, according to a study released this month by the Stockholm International Peace Research Institute (SIPRI), a widely respected independent resource on global security. China tops the list, Japan is second, South Korea is in third place, and Pakistan is at number 8.

Need for self-reliance:

- In the last five years, India has been the world’s top arms importer with a 15 per cent global share of imports.
- Nearly 50 per cent of the capital acquisition budget is spent on imports.
- This excludes many “indigenous” items assembled by Ordnance Factories (OFs) and Defence Public Sector Units (DPSUs) where a high percentage of raw materials and sub-systems are imported.
- In 1995, a committee under APJ Abdul Kalam, the then scientific advisor to the defence minister, had recommended that India should improve its indigenisation content from 30 per cent to 70 per cent by 2005.
- Although no official data exists, the self-reliance in defence production is still estimated to be less than 35 per cent.
- About 90 per cent of domestic defence manufacturing is currently done in the public sector, by the 9 DPSUs and 39 OFs.
- Since 2001, when private participation was allowed in defence sector, 222 letters of intents and industrial licences have been issued to around 150 firms. Of these, only 46 firms have commenced production so far.

Current status:

- Globally, 80 per cent of components, aggregates and assemblies of complex weapon systems and aircraft are made by MSMEs.
- In India, more than 6,000 MSMEs are currently supplying components and sub-assemblies to the DPSUs, OFs, DRDO and private firms.
- The Defence Acquisition Council (DAC), chaired by the defence minister, has approved procurement of equipment for more than Rs 1,17,830 crore during the UPA-II regime.
- Another Rs 1,50,000 crore worth of approvals have been given by DAC under the NDA government.
- A modelling of 35 selected projects cleared by DAC, along with their likely dates of induction — from 2012 to 2023 — has been done by a foreign manufacturer.

- The government policy now aims to achieve 70 per cent indigenisation in defence products by 2027.
- This translates into an Indian defence market of Rs 87,000 crore by 2022 and Rs 1,65,000 crore by 2027.
- It presents a huge opportunity to the DPSUs, foreign manufacturers, Indian private players and MSMEs.

Challenges

- **Low R and D investment:** As per data collated by the World Bank, India has been able to allocate only 0.66 per cent of GDP (2018) towards R&D, while the world average is 2.63 per cent.
 - The comparable individual R&D allocation (per cent of GDP) for some other nations is as follows: Israel 5.44; USA 3.45; Japan 3.26; Germany 3.14; China 2.4; and Turkey 1.09.
- **Low domestic competence:** Regrettably, India does not yet have the domestic competence to fully design and manufacture any significant combat weapon/platform and is dependent on the foreign supplier for the critical components that lie at the core of the combat index of the equipment in question.
- **Limitation of the industry:** Unlike other sectors, defence industry is a monopsony in which the single buyer, the government, is also the authority laying down procurement policies.
 - This makes active government support essential for private defence manufacturers, a fact borne out by the experience of countries — the US, Israel, Brazil and France — where private defence industry has flourished.
- **Import dependence** Thus, while it is commendable that India is now going to manufacture the C295 transport aircraft in a collaboration with Airbus, France, the reality is that the engine, avionics, landing gear, etc, will come from abroad and the integration will be done by the Indian entity.
- **Composite combat and manufacturing capabilities** have not been reviewed and honed appropriately.
 - Thus, while India now claims that it will soon become a major arms exporter, the composition of such inventory leans towards the “soft” category (clothing, helmets, surveillance equipment).
- India missed the industrial **design and manufacturing** bus, a national competence demonstrated by nations like South Korea and China, over the last five decades.
- Technological advances have made the design and manufacture of the semiconductor chip the new currency of national prosperity and military power.
- The US and China are now locked in intense competition in this domain and India is yet to acquire a profile that would be deemed relevant.
- Paradoxically, **Indian brain power** is very visible in the global semiconductor/chip fabrication effort but more at the lower end of the food chain, often as employees of the global venture capitalists.

Indigenous initiatives:

- **iDEX** Launched in April 2018, iDEX aims to achieve self – reliance and foster innovation and technology development in Defence and Aerospace by engaging Industries including MSMEs, start-ups, individual innovators, R&D institutes and academia
- **DefExpo 2022** held in Gandhinagar, Gujarat drew attention to the need for India to acquire the appropriate degree of “AatmaNirbharta” (self-reliance) in the defence sector and the arduous path ahead.
- Commissioning of the indigenously-designed and built aircraft carrier **INS Vikrant**
- The **firing of an SLBM** (submarine-launched ballistic missile) from the INS Arihant
- The radical decision to award the manufacture of a military transport aircraft (C 295) to a major private sector entity
- The conclusion of a deal with Russia to manufacture a **Kalashnikov-type light weapon/small arms** in India.
- The induction of the Hindustan Aeronautics Limited-made **Light Combat Helicopter Prachand** into the Indian Air Force in 2022
- The indigenous **105-mm Indian Field Guns** (IFG) replaced the Army’s British-era 25-pounder guns — which traditionally offered the symbolic 21-gun salute
- The Army’s mechanised column comprised three MBT Arjun MK-I, one Nag Missile System (NAMIS), two BMP 2/2K, three Quick Reaction Fighting Vehicles (QRFV), two K-9 Vajra Self Propelled Howitzer Guns, one Brahmos missile, two 10m Short Span Bridges, a Mobile Microwave Node and Mobile Network Centre, and two Akash missile systems.

Way forward:

- Even as India aspires to become a \$5-trillion economy, it is evident that it faces many national security inadequacies.
- The high dependency index on foreign suppliers (traditionally the former USSR now Russia) for major military inventory items is stark.
- This dependency induces a macro national vulnerability and dilutes India’s quest for meaningful and credible strategic autonomy.
- meaningful indigenisation and credible “AatmaNirbharta” calls for sustained funding support, fortitude and an ecosystem that will nurture this effort.



PRACTICE QUESTIONS



Q.1) Consider the following statements regarding Guru Gobind Singh:

1. He was the 5th Sikh guru.
2. He founded the Sikh warrior community called Khalsa in 1699
3. He laid the rules of Khalsa warriors, like abstaining from tobacco, alcohol, halal meat, and imbibing the duty of protecting innocent people from prosecution.

Which of the statements given above are correct?

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

Q.2) With reference to “VIRAASAT” scheme, consider the following statements

1. It is a scheme of Ministry of Tribal Affairs.
2. It aims to promote famous handcrafted varieties of Saris

Which of the following statements are correct?

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

Q.3) Which of the following countries are part of Schengen Zone, which is often mentioned in news?

1. Poland
2. Germany
3. Romania
4. Ireland

Select the correct answer using the code given below:

- a. 1 2 and 3 only
- b. 2 3 and 4 only
- c. 1 2 and 4 only
- d. 1 3 and 4 only

Q.4) Consider the following pairs:

Jain temple and location

1. Sammed Shikharji - Odisha
2. Gomateshwara temple – Karnataka
3. Shetrunjay Hill - Gujarat

How many pairs given above is/are correctly matched?

- a. None of the above
- b. One pair only
- c. Two pairs only
- d. All three pairs

Q.5) The Yo-Yo test and Dexa scan often mentioned in news related to

- a. Sports
- b. Law and order
- c. Traffic management
- d. none of the above

Q.6) Consider the following countries:

1. Djibouti,
2. Ethiopia,
3. Egypt
4. Somalia

Which of the above makes the part of Horn of Africa?

- a. 1 2 and 3 only
- b. 2 3 and 4 only
- c. 1 2 and 4 only
- d. 1 3 and 4 only

Q.7) With reference to ‘Eco-Sensitive Zones’, which of the following statements is/are correct?

1. Kerala has the highest number of Eco-Sensitive Zones.
2. Felling of trees is completely prohibited in these areas.

Which of the following statements are correct?

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

Q.8) Consider the following statements regarding The Chief Secretary of a state:

1. The Chief Secretary will be appointed by the Chief Minister of state.
2. The Chief Secretary acts as an ex-officio secretary to the state cabinet, therefore called "Secretary to the Cabinet."

Which of the statements given above is/are correct?

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

Q.9) Consider the following:

1. Households
2. Agriculture
3. Fossil fuels
4. Transportation

Which of the are sources of Black carbon which has serious consequences on climate change?

- a. 1 2 and 3 only
- b. 2 3 and 4 only
- c. 1 3 and 4 only
- d. 1 2 3 and 4

Q.10) Consider the following statements regarding Nilgiri Biosphere reserve:

- a. It spreads across four states only

- b. It is the first biosphere reserve in India established in the year 1986
- c. It spreads across both western ghats and eastern ghats

Which of the statements given above is/are correct?

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

Q.11) Consider the following statements regarding Mission Olympic Cell:

1. The MOC is under the chairmanship of the Director General, Sports Authority.
2. It is a dedicated body created to assist the athletes who are selected under the Target Olympic Podium (TOP) scheme.

Which of the statements given above is/are correct?

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

Q.12) Recently in news, 'Cloud Forest Bond' has been released by which of the following?

- a. International Monetary Fund
- b. World Bank
- c. Global Environment Facility
- d. Earth Security

Q.13) The Nalabana bird sanctuary often mentioned in news, is in

- a. Andhra Pradesh
- b. Bihar
- c. Odisha
- d. Karnataka

Q.14) Recently in news, 'Project Sambadh' is related to which of the following?

- Improving defence cooperation between India and Japan.
- Providing pensions to widowers of soldiers who died during battle.
- Improving Sino-Indian relations at the Line of Actual Control (LAC).
- To connect next of kin of physical casualties in the Army.

Q.15) With reference to 'African Swine fever', consider the following statements?

- It is endemic to Sub-Saharan Africa and is not found in other countries
- It is known to be highly contagious in human beings.

Which of the following statements are correct?

- 1 only
- 2 only
- Both 1 and 2
- Neither 1 nor 2

Q.16) Consider the following pairs:

Indigenous Cattle/buffalo breeds and States

- Masilum – Manipur
- Sanchori – Rajasthan
- Purnathadi – Karnataka

How many pairs given above is/are correctly matched?

- None
- One pairs only
- Two pairs only
- All three pairs

Q.17) With reference to India's culture and tradition, what is 'Ottanthullal'?

- It is an ancient Bhakti cult of Shaivism still prevalent in some parts of South India
- It is an ancient style bronze and brass works still found in southern part of Coromandel area
- It is a recite-and-dance art-form of Kerala filled with humour and satire
- It is an ancient martial art and a living tradition in some parts of South India

Q.18) Consider the following statements regarding Earth Radiation Budget Satellite (ERBS):

- It was part of NASA's three-satellite ERBE mission.
- The ERBS was designed to investigate how energy from the Sun is absorbed and re-radiated by the Earth.
- An instrument on ERBS, Stratospheric Aerosol and Gas Experiment II (SAGE II), collected data that found that ozone layer was declining on a global scale.

Which of the statements given above are correct?

- 1 and 2 only
- 2 and 3 only
- 1 and 3 only
- 1 2 and 3

Q.19) With reference to 'RuPay Cards', consider the following statements?

- It can be used at ATMs and POS devices but not on e-commerce platforms.
- It has been developed by the Reserve Bank of India.

Which of the following statements are correct?

- 1 only
- 2 only

- c. Both 1 and 2
- d. Neither 1 nor 2

Q.20) Consider the following statements regarding Paigah Tombs complex:

1. They are the tombs belonging to the nobility of Paigah family, who were fierce loyalists of the Nizams.
2. Built of granite marble, Paigah tombs captivate visitors with intricately designed interiors.
3. Paigahs were the only noble family who were permitted by the Sultan to have their private army.

Which of the statements given above are correct?

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

Q.21) Consider the following statements regarding United Nations Institute for Water, Environment and Health (UNU-INWEH):

1. It is an academic arm of the World Bank.
2. The Institute is located in Hamilton, Canada and its facilities are supported by McMaster University.

Which of the statements given above is/are correct?

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

Q.22) Consider the following statements regarding The Association of Man-made Fibre Industry of India (AMFII):

1. AMFII was registered as a Private Limited Company under section 25 A of the Companies Act 1956

2. The Association also acts as a liaison body on behalf of the industry and communicates with the Chambers of Commerce
3. The Association has its Registered Office in Delhi

Which of the statements given above is/are correct?

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

Q.23) Consider the following statements regarding Ebola Disease:

1. It is a fungal disease
2. It is mainly found in animals
3. It is spread through direct contact with body fluids — blood, saliva, sweat, tears, mucus, vomit, faeces, breast milk, urine and semen of people infected with it.

Which of the statements given above is/are correct?

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

Q.24) With reference to 'Alternate Investment Fund', consider the following statements

1. It is directly affected by volatility in securities market.
2. It is regulated by The Reserve Bank of India.

Which of the following statements are correct?

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

Q.25) With reference to 'Saltwater crocodile', their largest population is found in which of the following protected areas?

- Sundarbans
- Guindy National Park
- Bhitarkanika National Park
- Nagarjuna Srisailem Tiger Reserve

Q.26) With reference to 'Mission Antyodaya', consider the following statements

- It aims at providing free ration to the most backward districts of India.
- It is co-terminus with People's Plan campaign of Ministry of Rural Development

Which of the following statements are correct?

- 1 only
- 2 only
- Both 1 and 2
- Neither 1 nor 2

Q.27) Recently in news, Redshift phenomenon is a result of which of the following

- Doppler Effect
- Raman Effect
- Wave theory of light
- Quantum theory

Q.28) Consider the following statements regarding Katarniaghat Wildlife Sanctuary (KWS):

- It is located in terai region of Bihar
- The Gairwa river flows in the sanctuary area is declared as a sanctuary for Mugger and Gharials.
- Tharu tribal group lives near the sanctuary

Which of the statements given above are correct?

- 1 and 2 only
- 2 and 3 only
- 1 and 3 only
- 1 2 and 3

Q.29) With reference to 'National Financial Reporting Authority', consider the following statements

- It comes under Ministry of Finance.
- It is responsible for compliance of auditing standards.
- It was established in 2015.

Which of the following statements are correct?

- 1 only
- 2 only
- 1 and 3 only
- 1, 2 and 3

Q.30) The Keibul Lamjao National Park, the only floating national park in the world is in

- Meghalaya
- Manipur
- Assam
- Odisha

Q.31) With reference to 'kewda oil', consider the following statements

- The kewda oil tree is native to India.
- The kewda oil is used in zarda (flavoured tobacco) and pharmaceutical companies
- The kewda oil farmers and makers earn high revenues.

Which of the statements given above are correct?

- 1 and 2 Only
- 2 and 3 Only
- 1 and 3 Only
- 1, 2 and 3

Q.32) With reference to 'Atal Bhujal Yojana', consider the following statements

- It is a centrally sponsored scheme.

2. It aims at behavioural change in smart water management
3. It was introduced in 2020 in all the districts of the country

Which of the following statements are correct?

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

Q.33) Consider the following statements regarding Plankton:

1. Halteria plankton are found in large numbers in freshwater bodies.
2. Phytoplankton are microscopic animals which play a huge role in the marine food web.
3. krill, sea snails, pelagic worms and jelly fish are examples of Zooplankton.

Which of the statements given are correct?

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

Q.34) Consider the following statements regarding Export Promotion Capital Goods (EPCG) Scheme:

1. The EPCG scheme is administered by the Directorate General of Foreign Trade (DGFT).
2. Benefits under EPCG Scheme can be applied by any Exporter irrespective of his turnover.

Which of the statements given above is/are correct?

- a. 1 only
- b. 2 only

- c. Both 1 and 2
- d. Neither 1 nor 2

Q.35) Consider the following statements regarding National Museum of Natural History:

1. The National Museum of Natural History (NMNH) was a museum focusing on nature, located in New Delhi, India.
2. The museum functions under the Ministry of Culture.

Which of the statements given above is/are correct?

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

Q.36) Consider the following statements regarding Directorate General of Trade Remedies (DGTR):

1. It is an attached office of the Department of Commerce, Ministry of Commerce and Industry.
2. The DGTR is a quasi-judicial body that independently undertakes investigations before making its recommendations to the Central Government.

Which of the statements given above is/are correct?

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

Q.37) Which of the following are non-communicable diseases

1. Plasmodium
2. Diabetes
3. Cancer
4. Salmonella
5. Lyme disease
6. Arthritis

Select the correct answer using the code given below.

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

Q.38) With reference to the Shree Jagannath Temple of Puri, consider the following statements:

1. It is the first temple in the history of Kalingaan temple architecture where all the chambers like Jagamohana, Bhogamandapa and Natyamandapa were built along with the main temple
2. The temple is built in the Dravidian style of architecture

Which of the statements given above is/are correct?

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

Q.39) Consider the following statements regarding Aravali mountain ranges:

1. It is one of the oldest fold mountain systems in the world.
2. It spreads across three states only
3. Rives such as the Banas, Luni, Sakhi, and Sabarma originates in the region

Which of the statements given above is/are correct?

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

Q.40) Consider the following statements regarding Open Market Sale Scheme:

1. It refers to selling of foodgrains by Government / Government agencies at predetermined prices in the open market from time to time.
2. For transparency in operations, the FCI has switched over to e- auction for sale under Open Market Sale Scheme (Domestic).

Which of the statements given above is/are correct?

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

Q.41) Consider the following statements regarding Food Corporation of India:

1. FCI is a statutory body set up in 1965 under the Food Corporations Act 1964.
2. It is a Public Sector Undertaking, under the Ministry of Agriculture and Farmers Welfare.
3. FCI coordinates its functions through a country-wide network of offices with Headquarters at Mumbai.

Which of the statements given above is/are correct?

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

Q.42) With reference to 'Kelp forests', consider the following statements

1. Kelp forests are large brown plants that regulate the underwater ecosystem.
2. Kelp can be used as binding agents in cosmetic products.

Which of the statements given above are correct?

- a. 1 Only
- b. 2 Only
- c. Both 1 and 2

d. Neither 1 nor 2

Q.43) Consider the following:

1. Proso
2. Foxtail
3. Ragi
4. Kodo millet

Which of the above are examples of Minor Millets?

- a. 1 2 and 3 only
- b. 2 3 and 4 only
- c. 1 2 and 4 only
- d. All of the above

Q.44) Consider the following statements regarding Commission on Genetic Resources for Food and Agriculture (CGRFA):

1. It is the only permanent intergovernmental body that specifically addresses all components of biological diversity for food and agriculture.
2. Membership of the Commission is open to all Members of FAO.

Which of the statements given above is/are correct?

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

Q.45) Consider the following statements regarding Central Board of Indirect Taxes and Customs (CBIC) is/are correct?

1. It works under the Department of Economic Affairs of the Ministry of Finance.
2. It deals with the tasks of formulation of policy concerning levy and collection of customs, central excise duties, Central Goods & Services Tax (CGST) and Integrated GST (IGST).

Which of the statements given above is/are correct?

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

Q.46) With reference to Jatar Duel situated near Sundarbans, consider the following statements:

1. It is based on Nagara style of temple architecture.
2. It was meant to promote the Vaishnava cult in the region.
3. It is traditionally connected to an inscription by Raja Jayantachandra issued in 975 AD.

Which of the statements given above are correct?

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

Q.47) Zaskar range is situated to the

- a. South of Great Himalayan Range
- b. South of Kargil
- c. North of Nubra Valley
- d. North of Kailash range

Q.48) Consider the following statements regarding Indian Institute of Corporate Affairs (IICA):

1. IICA was registered as a society on September 12, 2008 under the Societies Registration Act, 1860.
2. IICA works under the aegis of the Ministry of Finance to deliver opportunities for research, education, and advocacy.

Which of the statements given above is/are correct?

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

Q.49) With reference to mandatory sentences in judicial system, consider the following statements:

1. The concept is originally Canadian.
2. In India, such sentences are prescribed for all sexual offenses under the Prevention of Children from Sexual Offences (POCSO) Act including the offense of sexual harassment.

Which of the above statements are incorrect?

- a. Only 1
- b. Only 2
- c. Both 1 and 2
- d. Neither 1 nor 2

1. It was set up in 1992 as apex autonomous institute under the administrative control of Ministry of Chemicals and Fertilizers.
2. It is performing primary statutory function of Quality Control of Insulin, erythropoietin, blood products, diagnostic kits.

Which of the statements given above is/are correct?

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

Q.50) Consider the following statements regarding National Institute of Biologicals:



KEY ANSWERS



1	b	11	c	21	b	31	b	41	b
2	b	12	d	22	a	32	b	42	b
3	c	13	d	23	d	33	c	43	c
4	c	14	d	24	d	34	c	44	c
5	a	15	d	25	c	35	a	45	b
6	c	16	b	26	d	36	c	46	b
7	d	17	c	27	a	37	b	47	b
8	c	18	d	28	b	38	a	48	a
9	d	19	d	29	b	39	c	49	a
10	c	20	c	30	b	40	c	50	b

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