WE4U IAS COACHING

UPSC MONTHLY CURRENT AFFAIRS

FEBRUARY 2023

1.INDIAN POLITY

2.INDIAN ECONOMY

3. INDIAN HISTORY AND CULTURE

4.GEOGRAPHY

5.ENVIRONMENT

6.SCIENCE & TECHNOLOGY

1.Indian Polity

1.1 Privilege Motion

* A breach of privilege motion moved against senior BJP MLA and Deputy Leader of the Opposition led to an uproar in the Rajasthan Assembly recently, with Speaker announcing that a decision on the motion will be taken shortly.
* It is concerned with the breach of parliamentary privileges by a minister.
* Breach of Parliamentary Privileges: Parliamentary Privileges are certain rights and immunities enjoyed by members of Parliament, individually and collectively, so that they can "effectively discharge their functions".
* When any of these rights and immunities are disregarded, the offence is called a breach of privilege and is punishable under law of Parliament.
* A notice is moved in the form of a motion by any member of either House against those being held guilty of breach of privilege.
* Its purpose is to censure the concerned minister.
* Role of the Speaker/Rajya Sabha (RS) Chairperson:
* The Speaker/RS chairperson is the first level of scrutiny of a privilege motion.
* The Speaker/Chairperson can decide on the privilege motion himself or herself or refer it to the privileges committee of the Parliament.
* If the Speaker/Chairperson gives consent under relevant rules, the member concerned is given an opportunity to make a short statement.

Rules Governing Privilege:

* Rule No 222 in Chapter 20 of the Lok Sabha Rule Book and correspondingly Rule 187 in Chapter 16 of the Rajya Sabha rulebook governs privilege.

* Rules say that a member may, with the consent of the Speaker or the Chairperson, raise a question involving a breach of privilege either of a member or of the House or a committee thereof. Parliamentary Privileges
* Parliamentary privileges are special rights, immunities and exemptions enjoyed by the two Houses of Parliament, their committees and their members.
* The Constitution also extends the parliamentary privileges to those persons who are entitled to speak and take part in the proceedings of a House of Parliament or any of its committees. These include the Attorney General of India and Union ministers.
* The parliamentary privileges do not extend to the President who is also an integral part of the Parliament. Article 361 of the Constitution provides for privileges for the President.
* Article 105 of the Constitution expressly mentions two privileges, that is, freedom of speech in Parliament and right of publication of its proceedings.
* Apart from the privileges as specified in the Constitution, the Code of Civil Procedure, 1908, provides for freedom from arrest and detention of members under civil process during the continuance of the meeting of the House or of a committee thereof and forty days before its commencement and forty days after its conclusion.
* It needs to be noted that the Parliament, till now, has not made any special law to exhaustively codify all the privileges.

Privilege Committee

* It is a Standing Committee. It examines the cases of breach of the privileges of the House and its members and recommends appropriate action.
* The Lok Sabha committee has 15 members, while the Rajya Sabha committee has 10 members.

1.2 Right to be Forgotten

News:

Recently, a doctor brought up the 'Right to be Forgotten' in the Delhi High Court after a wrongful arrest in response to a fabricated FIR against him.

Concept:

Right to be Forgotten

* The 'Right to be Forgotten' is a **fundamental right granted to individuals in some countries and regions around the world. It allows people to request the removal of personal information from public records that have been published online,** such as on social media platforms, search engines and other websites.

K.S. Puttaswamy v. Union of India 2017

* One of the significant developments in this area was the recognition of the right to privacy as a fundamental right under article 21 of the Indian Constitution in the landmark case of Justice K.S. Puttaswamy (Retd.) and Another v. Union of India and Others in 2017. This case laid the foundation for recognizing the importance of data privacy and individual autonomy in India.

Google LLC v. Visakha Industries 2018

* In 2018, the Delhi High Court, in the case of Google LLC v. Visakha Industries and Another, directed Google to de-index certain web pages that

contained allegedly defamatory content. While this case did not explicitly recognize the right to be forgotten, it did provide some guidance on how the courts in India may approach issues related to data privacy and online content.

Significance of the Right to be Forgotten

The right to be forgotten is a complex legal concept that can have both advantages and disadvantages. Here are some of the key advantages of the right to be forgotten:

Protects Privacy: The right to be forgotten can help individuals protect their privacy and personal information by allowing them to request the removal of their personal information from online platforms or search engines.

Reduces the Risk of Harm: The right to be forgotten can help reduce the risk of harm to individuals by preventing their personal information from being used for malicious purposes, such as identity theft.

Supports Freedom of Expression: The right to be forgotten can support freedom of expression by allowing individuals to control their personal information and ensure that it is accurate and up-to-date.

Neutral citation System

Recently, the Chief Justice of India (CJI) D Y Chandrachud announced that the Supreme Court will adopt a "neutral citation system" for its judgments.

- A case citation is essentially an identification tag for a judgment. Typically, it would contain **a reference number**, the **year of the decision**, the **name of the court**that delivered that judgment, and **shorthand for the journal publishing** the judgment.

What is a neutral citation?

- A neutral citation is a form of citation where courts assign a unique sequential number to each decision.

- This would **assign its own citation**— distinct from those given by traditional Law Reporters.
- Law Reporters are **periodicals or annual digests**that publish judgments, often with an editorial note to make it accessible for lawyers to refer to precedents.

1.3 MISHTI scheme

What is MISHTI Scheme?

* The Mangrove Initiative for Shoreline Habitats & Tangible Incomes (MISHTI) scheme is a new programme that will facilitate mangrove plantation along India's coastline and on salt pan lands.
* The programme will operate through "convergence between MGNREGS, Campa Fund and other sources.
* This new programme will aim at intensive afforestation of coastal mangrove forests.
* India has such forests on both its Eastern and Western coasts with the Sundarbans in Bengal being one of the largest mangrove forests on the planet.

1.4 e-Gram SWARAJ

News:

Union rural development and Panchayati raj minister Giriraj Singh recently launched Mission Antyodaya Survey 2022-23, which will shed light on how government schemes have benefited rural India and what is the current economic situation of the country's villages.

Content:

* To bring in better transparency and strengthening of the e-Governance in Panchayati Raj Institutions (PRIs) across the country through decentralized planning, progress reporting and work-based accounting.
* It will also assist in enhancing the credibility of Panchayats which would induce greater devolution of funds to PRIs.
* It will help in establishing a strong financial system by integrating the PRIASoft and Public Financial Management System (PFMS).
* The PRIASoft (Panchayati Raj Institutions Accounting Software) is the Online Payment Module whereby Gram Panchayats are carrying out online payments to the vendors and service providers.
* The main objective of introducing such a module is to have a sound financial management system in the Panchayats leading to their greater credibility and image.
* These endeavours are also congruent to that of Digital India Programme which is to transform India into a digitally empowered society and knowledge economy.

1.5 Office of Profit

Context: Allegation against Jharkhand Chief Minister for allegedly allocating a mining lease to himself when he was the mining and forest minister of Jharkhand, which violates

Concept:

Office of Profit norms.

Office of Profit'?

* In India, the concept of an "Office of Profit" refers to a situation where a person holds a government position that brings them financial gain or other

advantages, while at the same time they hold an elected or other public office.

* The idea behind this concept is to prevent any conflict of interest and ensure that elected representatives do not hold positions that may compromise their independence and impartiality.
* Indian context to this
* MPs and MLAs, as members of the legislature, hold the government accountable for its work.
* The essence of disqualification is if legislators hold an 'office of profit' under the government, they might be susceptible to government influence, and may not discharge their constitutional mandate fairly.
* The intent is that there should be no conflict between the duties and interests of an elected member.
* Hence, the office of profit law simply seeks to enforce a basic feature of the Constitution- the principle of separation of power between the legislature and the executive.

What governs the term?

* At present, the Parliament (Prevention of Disqualification) Act, 1959, bars an MP, MLA or an MLC from holding any office of profit under the central or state government unless it is exempted.
* However, it does not clearly define what constitutes an office of profit.
* Legislators can face disqualification for holding such positions, which bring them financial or other benefits.
* Under the provisions of Article 102 (1) and Article 191 (1) of the Constitution, an MP or an MLA (or an MLC) is barred from holding any office of profit under the Central or State government.

1.6 Judicial Majoritarianism

Context: As the recent majority judgment of the Supreme Court on demonetisation comes under criticism, the minority judgment by J. Nagarathna is being hailed for its challenge to the RBI's institutional acquiescence to the Central government.

About Judicial

What is judicial majoritarianism? The requirement for a majority consensus flows from Article 145(5) of the Constitution, which states that no judgment in such cases can be delivered except with the concurrence of a majority of the judges but that judges are free to deliver dissenting judgments or opinions.

1.7 NAMASTE Scheme

Context:

Union Budget 2023-2024 has allocated nearly Rs 100 crore for the National Action for Mechanised Sanitation Ecosystem (NAMASTE).

About NAMASTE Scheme:

• It was launched in 2022 as a Central Sector Scheme.

• The scheme is being undertaken jointly by the Ministry of Housing and Urban

Affairs and the Ministry of Social Justice & Empowerment (MoSJE) and aims to eradicate unsafe sewer and septic tank cleaning practices.

Objectives of the scheme:

• Zero fatalities in sanitation work in India.

• All sanitation work is performed by skilled workers.

• No sanitation workers come in direct contact with human faecal matter.

• Sanitation workers are collectivised into Self Help Groups (SHGs) and are empowered to run sanitation enterprises.

• Strengthened supervisory and monitoring systems at National, State and Urban Local Body (ULB) levels to ensure enforcement and monitoring of safe sanitation work.

What are the Key Features of the Scheme to be Implemented in all ULBs?

• Identification: NAMASTE envisages identifying the Sewer/Septic Tank Workers (SSWs).

• Occupational Training and distribution of PPE Kits to SSWs.

• Assistance for Safety Devices to Sanitation Response Units (SRUs).

• Extending Health Insurance Scheme Benefits to identified SSWs and their families under the Ayushman Bharat- Pradhan Mantri Jan Arogya Yojana (ABPMJAY).

1.8 Article 105 of the Indian Constitution

Context:

Recently, the Congress President cited Article 105 of the Constitution that deals with the privileges and powers of parliamentarians, to protest against the expunction of parts of his speech.

Article 105

* Article 105 of the Indian Constitution provides freedom of speech in Parliament, and exempts members from legal action for anything said or done in the course of their duties.
* The Constitution, however prohibits discussions in Parliament regarding the conduct of judges of the Supreme Court or of a High Court, except upon a

motion for presenting an address to the President praying for the removal of the Judge.

* The immunity of MPs extends to certain non-members, such as the Attorney General for India or a Minister who may not be a member but speaks in the House.
* The idea of this privilege of Parliament originated from the Government of India Act, 1935, with references to the powers and privileges enjoyed by the House of Commons in Britain.

1.9 Doctrine of necessity

Context: Recently, the Competition Commission of India (CCI) Invoked the "doctrine of necessity" to clear six deals involving mergers & acquisitions (M&A) and investment proposals.

Doctrine of necessity

* The doctrine of necessity shields the adjudicators from bias. However, the said doctrine does not give the license to use the excuse of bias in deciding every case. This means that the doctrine of necessity disqualifies such adjudicators who resort to bias while arriving at decisions. But, there are certain exceptions wherein such biased decisions given by the adjudicator are held valid. The exceptions are as follows –
* There is no availability of another competent person for arbitration.
* In the absence of whom (the adjudicator) a quorum cannot be formed.
* There is no possibility of establishing another competent tribunal.
* In case the doctrine of necessity is invoked in every legal matter then there is a high possibility that it would be in favour of the defaulting party. Simultaneously, if the doctrine of necessity is totally abandoned then it would terminate the decision thereby not providing any justice at all to either of the parties.

1.10 Legal Aid Defense Counsel System (LADCS)

Context: Recently the Chief Justice of Telangana High Court said that newly introduced system of Legal Aid Defense Counsel System (LADCS) should help under-trial prisoners belong to marginalised and weaker sections of the society.

Legal Aid Defense Counsel System (LADC)

* Aim: To provide free legal aid to poor people facing criminal cases to defend themselves during trial.
* It is funded by National Legal Services Authority (NALSA).
* It is in line with the 'Public Defender System'.
* It will have full-time legal aid lawyers in 365 district legal services authorities across India.

What are Legal Services Authorities?

* Legal Services Authorities provide legal services to accused/convicts, who are in custody or otherwise coming within the eligibility criteria spelt out in Section 12 of the Legal Services Authorities Act, 1987.

Objectives:

* To provide quality legal services in criminal matters to eligible persons.
* To professionally manage and implement legal aid system in criminal matters.
* Advantages:
* Availability and accessibility of Legal Aid Defense counsel
* Effective and efficient representation by seasoned lawyers
* Effective monitoring of legal aided cases
* Professional management of legal aid work in criminal matters
* Enhanced responsiveness leading to updating of legal aid seekers about the progress of their cases

* Adequate time to commit to legal aided cases
* Ensuring accountability on the part of the legal aid providers.

1.11 International Mother Language Day

Context: The world celebrates International Mother Language Day on February 21, 2023.

What is International Mother Language Day?

About:

* UNESCO declared 21st February as International Mother Language Day in 1999 and the World has been celebrating the same since 2000.
* The day also commemorates a long struggle by Bangladesh to protect its mother language Bangla.
* The resolution to mark 21st February as the International Mother Language Day was suggested by Rafiqul Islam, a Bangladeshi living in Canada.

Aim:

* UNESCO has emphasised the importance of mother-tongue-based education for the preservation of linguistic heritage, and the International Decade of Indigenous Languages has been initiated to safeguard cultural diversity.

Concern:

* According to the United Nations (UN), every two weeks, a language disappears and the world loses an entire cultural and intellectual heritage.
* In India, this is especially affecting tribal areas where children struggle to learn in schools that do not offer instruction in their native tongues.
* Only 6 tribal languages in the state of Odisha have a written script, leaving many without access to literature and learning materials.
* About Languages in India:

- Indian Languages are classified into several groups, including the Indo-Aryan group, the Dravidian group, the Sino-Tibetan group, Austric, and others.
- Article 343 (1)of the Indian Constitution mentions that “the official language of the Union shall be Hindi in Devanagari script.”
- Part XVII of the Indian constitution deals with the official languages of India from Article 342 to 351.
- There are 22 languages listed under the 8th Schedule of the Indian Constitution namely Assamese, Bengali, Bodo, Dogri, Gujarati, Hindi, Kannada,Kashmiri, Konkani, Malayalam, Manipuri, Marathi, Nepali, Odia, Punjabi,Sanskrit, Sindhi, Tamil, Telugu, Urdu, Santhali, and Maithili.

2.INDIAN ECONOMY

2.1 Consumer price index – Industrial workers

In News:

The All-India CPI-IW for December, 2022 decreased by 0.2 points and stood at 132.3 (one thirty two point three) points.

What is the Consumer Price Index (CPI)?

* The Consumer Price Index (CPI) is a measure of price changes in a basket of consumer goods and services purchased by households.
* CPI is a numerical estimate based on the rates of a selection of typical objects whose prices are collected on a regular basis.
* The Consumer Price Index (CPI) measures price fluctuations at the consumer level.
* The CPI is divided into eight categories: education, communication, transportation, recreation, clothes, foods and beverages, housing, and medical care.
* The CPI is published by the National Statistical Office (NSO) under the Ministry of Statistics and Program Implementation.
* The CPI uses a base year set at 2011-2012.
* The CPI is published on a monthly basis.
* The Wholesale Price Index tracks price changes at the producer level (WPI).
* Consumer Price Index-CPI in 2021

How is CPI calculated?

* The Consumer Price Index, or CPI, measures changes in the price of a common basket of goods and services by comparing current prices to prices from the previous year's similar time.
* CPI is calculated using the following formula:

Types of CPI

There are 4 different types of CPI measured:

1.CPI for Industrial Workers (CPI-IW)

It attempts to quantify changes in the pricing of a fixed basket of products and services used by Industrial Workers over time.

A typical working-class family from any of these seven economic sectors, ranging from industries, mines, plantations, motor transport, port, railways, and energy generation and distribution, would be the target demographic.

The Labour Bureau compiled this list. This functions under the Ministry of Labour and Employment.

2.CPI for Agricultural Laborers (CPI-AL)

The Labor Bureau compiles this data to help revise minimum wages for agricultural labor in different States.

3.CPI for Rural Labourer (CPI-RL)

The Labour Bureau compiled this list. This functions under the Ministry of Labour and Employment.

4.CPI (Urban Non-Manual Employees) (CPI-UNME)

This information is compiled by the Central Statistics Office (CSO), which is now known as the National Statistical Office (NSO).

The Ministry of Statistics and Program Implementation oversees the NSO.

Revision and new terminologies

Base Year Revision and new terminologies

In its Report (2001), the National Statistical Commission (NSC), led by Dr. C. Rangarajan, proposed the compilation of CPI for rural and urban areas.

The Standing Committee on Finance (2009-10) also accepted the NSC (2001) report (15th Lok Sabha, 6th Report on Inflation and Price Rise)

With effect from January 2011, the Central Statistics Office (CSO), Ministry of Statistics, and Programme Implementation began issuing Consumer Price Indices (CPI) on a monthly basis for all of India and States/UTs, separately for rural, urban and combined.

In January 2011, the CPI (R), CPI (U), and CPI (C) with Base Year 2010 were issued.

Then in 2015, from 2010 to 2012, the base CPI was updated.

Components

Components of CPI

The following are the primary components of CPI (C): (along with their weights)

Food and Beverage – 45.86;

Food and Beverage – 45.86;

Housing – 10.07;

Fuel and Light – 6.84;

Clothing and Footwear – 6.53;

Pan, tobacco, and intoxicants – 2.38;

Miscellaneous – 28.32;

Note: Housing inflation is not factored into the CPI (R)

Significance of CPI

- CPI (C) has been utilized as a nominal anchor for the conduct of monetary policy in India since the RBI established Inflation Targeting.
- The Monetary Policy Committee is required to keep the CPI (C) in the range of 2% to 6%. As a result, the CPI is used to target inflation.
- In the National Accounts, CPI is also utilized as a deflator.
- The Consumer Price Index (CPI) is also used to calculate Dearness Allowance.

2.2 Follow on Public Offering

- Adani Enterprises recently said it has decided not to go ahead with its ₹20,000-
- crore follow-on public offer (FPO) and will return the proceeds to investors.
- A Follow-on Public Offering (FPO) is the issuance of shares to investors by a company listed on a stock exchange. FPOs are also known as secondary offerings. Companies may use an FPO to reduce debt or raise more capital for expansion.

2.3 Reverseflipping

Context:

Economic Survey 2022-23 has suggested measures like simplifying ESOP taxation, and easier corporate laws like in the US and Singapore to accelerate reverse flipping among startups, namely moving domicile back to India.

About Flipping and Reverse-flipping:

• Flipping is the process of transferring entire ownership of an Indian company to an overseas entity.

o It is generally accompanied by a transfer of all intellectual property and data owned by an Indian company.

• Reverse Flipping is the process of shifting the domicile of those companies back to India who flipped earlier.

o Companies reverse flip because of easy access to capital from private equity and venture capital, changes in rules regarding round-tripping, and the growing maturity of India's capital market. Reasons for Flipping:

• Flipping happens at the early stage of the startups, driven by commercial, taxation and personal preferences of founders and investors.

o Some companies decide to 'flip' because the major market of their product is offshore.

o Sometimes, investor preferences like access to incubators drive the companies to 'flip' as they insist on a particular domicile.

• For easy access to capital from private equity and venture capital, changes in rules regarding round-tripping, and the growing maturity of India's capital market.

2.4 Angel Tax

Context:

Recently, the Finance Bill, 2023, has proposed to amend Section 56(2) VII B of the Income Tax Act, related to Angel tax.

Angel Investors:

* An angel investor is an individual who provides capital for a start-up, in exchange for convertible debt or ownership equity.
* Angel Investors are Wealthy Individuals or High Net worth Individuals having huge wealth. These investors generally provide seeding capital or initial capital to a start-up entity to earn healthy profit or capital appreciation of investment once start-ups come into operations and exist from the start-ups.
* Tax benefits available to an Eligible Start-Up:
* Exemption from levy of angel tax under section 56(2)(viib);
* Deductions under section 80-IAC of the income tax Act.

What is Angel Tax? Decoded

Definition

* Angel tax is levied on start-ups when they receive investments in excess of their 'fair market value'. The perceived profit is considered as income from other sources—it's taxed at 30% and termed as angel tax.
* Note that angel tax (as of now) is not applicable in the case of investments made by venture capital firms or foreign investors. It's limited to investments made only by Indian investors.

Description

* Referred to colloquially as Angel Tax, this rule is described in Section 56(2)(viib) of the Income Tax Act, 1961.
* This clause was inserted into the act in 2012 to prevent-laundering of black money, and roundtripping via investments with a large premium into unlisted companies. Essentially it's a tax on capital receipts, unique to India in the global context.
* The tax covers investment in any private business entity, but only in 2016 was it applied to startups.
* A step to prevent Money Laundering:In India, unlike in the US, the angel investor does not get any tax rebate for investment in small businesses. So, people can invest their black money in start-ups and make it legal. Angel tax was introduced to prevent money laundering that might happen in the name of investment.

2.5 InfoCrop

Context:

Recently, scientists at the Indian Agricultural Research Institute (IARI) in Delhi conducted a first-of-its-kind experiment to quantify the impact of the hot weather on crop yield in Punjab and Haryana by using InfoCrop version 2.1.

About InfoCrop simulation Model:

* In 2004, InfoCrop version 1 was launched by the IARI which is being updated regularly.
* It is a dynamic simulation model for the assessment of crop yields, losses due to pests, and the environmental impact of agroecosystems in tropical environments.

* It has the life cycle data for almost all the local varieties of 11 crops: paddy, wheat, maize, sorghum, pearl millet, pigeon pea, chickpea, soybean, groundnut, potato and cotton.
* It provides daily and summary outputs on various growth and yield parameters, nitrogen uptake, greenhouse gas emissions, soil water and nitrogen balance.

InfoCrop version 2.1, India's only dynamic crop simulation model developed and released by the IARI in 2015 to study the long-term impact of climate change and crop management practices on yield.

2.6 Millet International Initiative forResearch and Awareness (MIIRA)

Context:

On the sidelines of G20 presidency, India is planning to propose the launch of a global initiative to encourage the consumption and production of millets.

About Millet International Initiative for Research and Awareness (MIIRA):

* It aims to connect the millet research organisations across the world while also supporting research on millet crops.

* Secretariat: Delhi, India
* It is in line with the UN declaring 2023 as the International Year of Millets and the Centre's plan to make India a global hub for millets.
* G20 meetings on agriculture:
* 3 of Agriculture Deputies,
* 1 of chief scientists, and
* 1 where the Agriculture Ministers of all G-20 countries will gather.
    - It will be launched keeping in mind the nutritional value and the climate resilient nature of millets.
    - It will set up a web platform to connect researchers and holding international research conferences.
* India will contribute the "seed money" while each G20 member will later have to contribute to its budget in the form of a membership fee.

3.HISTORY AND ART & CULTURE

3.1 Sacred Shaligram Stones

Context:

Two sacred Shaligram stones, weighing 31 tonnes and 15 tonnes, arrived in

Ayodhya in Uttar Pradesh. The stones are expected to be used for constructing the idols of Lord Ram and Janaki at the Ram Temple.

What is a Shaligram Stones?

- Shaligram stones are fossils of ammonite, which is a type of mollusk that lived between 400 million and 65 million years ago.
- They are found in the Shaligram Pilgrimage in the Nepal Himalayas.
- They date specifically from the Early Oxfordian to the Late Tithonian Age near the end of the Jurassic Period some 165-140 million years ago.
- Mostly found in riverbeds or banks of the Kali Gandaki, a tributary of the Gandaki River in Nepal, this stone is revered as a representation of Lord Vishnu.
- The stone is considered to have divine powers and is seen as a symbol of good luck and prosperity.

Mythological significance

- Historically, the use of shaligrama shilas in worship can be traced to the time of Adi Shankara through the latter's works.
- Specifically it finds mention in the Taittiriya Upanishad.
- The statue of Vishnu in the Padmanabhaswamy Temple of Thiruvananthapuram and Badrinath Temple of Garhwal region, and that of Krishna in Krishna Matha of Udupi and Radha Raman Temple of Vrindavana are also believed to be made from shaligrama shilas.

3.2 Stone Age Paintings in Gurugram

Context:

Stone carvings that archaeologists say date back to the Palaeolithic period or the Stone Age. have been discovered in Gurugram.

About Rakhigarhi and discoveries:

* The discovery of stone carvings has been made in the Badshahpur area of Tethar village of Sohna.
* The petroglyphs discovered in the area include hand and footprints of animals and humans engraved on quartzite rocks and graffiti.
* Most of the carvings are of animal paws and human footprints, while some are just basic symbols, which had presumably been kept for some special purpose.
* **Rakhigarhi:**
    - Rakhigarhi in Haryana is the largest Harappan site in the Indian subcontinent.
    - At Rakhigarhi, the excavations are being done to trace its beginnings and to study
    - its gradual evolution from 6000 BCE (Pre-Harappan phase) to 2500 BCE.
    - Rakhigarhi is an ideal candidate to believe that the beginning of the Harappan

- civilization took place in the Ghaggar basin in Haryana and it gradually grew from here.

3.3 Kingdom of Vijayanagara

Context:

Salman Rushdie's latest work, "Victory City" is a fictionalized telling of the story of Vijayanagara, one of the richest and most powerful kingdoms in medieval India.

VIJAYANAGARA EMPIRE (1336 -1646 AD)

* It was founded in 1336 by Harihara and Bukka (with the blessings of Guru Vidyaranya) of the Sangama dynasty who originally served under the Kakatiya rulers of Warangal.
* They later proclaimed their independence and founded a new city on the south bank of the Tungabhadra River named it "Vijayanagar" (City of Victory)
* Early Vijayanagar rulers were followers of Saivism. Virupaksha was their family God. Later they came under the influence of Vaishnavism. However, Siva continued to be worshipped.
* There was constant conflict between Vijayanagar Empire and Bahamani kingdom over Raichur doab (fertile region between Krishna and Tungabhadra), Tungabhadra doab (fertile areas of Krishna-Godavari delta) & Marathwada.
* In the south its main rivals were the Sultans of Madurai.
* During the reign of Rama Raya, the combined forces of Bijapur, Ahmednagar, Golkonda and Bidar defeated him at the Battle of Talaikotta in 1565 which marked an end of the Vijayanagar Empire.

* The last ruler of Vijayanagar was Sri Ranga III
* Four Dynasties ruled Vijayanagar from A.D. 1336 TO 1672:
* They are sangama,saluva,tuluva and Aravidu.

3.4 Treaty of Alinagar

Context:

The Treaty of Alinagar, signed in 1757, was a reluctant agreement signed by Bengal's Nawab Siraj ud Daula with the English East India Company.

The Treaty of Alinagar, signed on February 9, 1757, was a reluctant agreement signed by Bengal's Nawab Siraj ud Daula with the English East India Company. An outcome of decades of tension that bubbled over into armed conflict between the two parties, the Treaty strengthened the position of the British in Bengal and laid foundations for the Battle of Plassey a few months later.

Background:

East India Company:

* The English East India Company was formed in 1600 by a royal charter.
* The charter gave the Company monopoly of all trade from England in the East and the right to carry gold bullion to finance its activities, with the aim of combating growing Dutch influence in the East.
* Notably, at the time, the charter did not give the Company an overt mandate to colonise or go on imperial conquest.

Trading with India:

* The Company formally began trading with India in 1613, supported by a royal farman from Mughal emperor Jehangir which allowed the Company to open its factories and warehouses.
* Till the middle of the 18th century, the Company worked with local rulers, often subservient to them, and established a thriving business.
* While over time it had acquired control of various trading posts on both sides of the coast, the Company was yet to engage in a concerted effort to expand its territories.
* Notably, alongside trade that was carried out officially by the Company, its officers also engaged in private trade. This was highly lucrative and many Company officers made large fortunes while serving in India.
* Troubles in Bengal:
* The three primary trading towns where thriving British communities emerged by the 18th century were Bombay, Madras and Calcutta.
* Of these, Calcutta was the most important, as by the 18th century, goods from Bengal comprised nearly 60 per cent of all English imports from Asia.
* It was Mughal emperor Aurangzeb who gave the Company the right to trade in Bengal for an annual payment of Rs 3000.
* After his death in 1707, the Mughal Empire started to crumble.
* Those who were previously subordinate to the Mughal crown started vying for autonomy. While the Mughal emperor remained the symbolic head across much of the erstwhile Mughal heartland, his actual power was fast diminishing.
* This was a problem for the British, who relied on the legitimacy of the Mughal crown to carry out trade,
* When another farmaan from the Mughal emperor Farrukhsiyar in 1917 established favourable terms for the Company to continue its trade in Bengal, this was met with local opposition.

* Nawab Murshid Quli Khan, the new autonomous ruler of Bengal, refused to extend the 1917 farmaan's duty-free provision to cover also the private trade of the Company officials. He also denied permission to the Company to buy the thirty-eight villages and refused to offer minting privileges to the British.
* To get around the Nawab's order on private trade, officers carried out massive fraud, showing their private business as the Company's.
* Over time, this would be a source of constant acrimony between the Nawab and the Company, starting its troubles in Bengal.
* It also led to the dawning of an important realisation – controlling territory would be the obvious next step towards expanding British business in India and in the context of the subcontinent's fragmented polities, this would also be very possible.

Tensions boil:

* Over the next few decades, the Company did not just have political troubles with the Nawab of Bengal but also engaged in a number of military conflicts with the French in South India.
* In 1755, vary of French competition, the English began renovating the fortifications in Calcutta without the Nawab's permission.
* The situation was already tense when matters took a turn for the worse in 1756. An Indian trader named Krishna Ballabh took refuge inside the renovated Fort William in Calcutta. He had been charged with cheating by the new Nawab, Siraj ud Daula.
* This was a major provocation and the young Nawab threatened military action as well as a crackdown on the Company's business.
* When the Company failed to listen to warnings, Siraj showed his strength by taking over the Company factory at Cossimbazar.

* A few weeks later, the Nawab's forces would attack Fort William, capturing Calcutta on June 20. They would ransack the city and the Nawab would shortly rename it Alinagar.
* However, the Nawab's position was far weaker than his easy takeover of Calcutta made it seem.
* Not only did he face a large Company force on its way to Bengal from Madras under Robert Clive, there was also the looming threat of the Afghans under Ahmad Shah Abdali who had already caused havoc in the Northern territories of the weak Mughal Empire.
* A surprise attack by the Company forces defeated the Nawab's forces outside Calcutta in early 1757.
* Under the threat of an impending Afghan assault and under advice from his ministers, the Nawab reluctantly decided to sign a treaty with the Company on February 9, 1757: the Treaty of Alinagar.

The Treaty:

* This treaty restored all the privileges that Farrukhsiyar's 1717 farmaanhad granted to the East India Company, allowing it to carry out duty-free trade, build further fortifications and operate a mint.
* Though the treaty ostensibly maintained the sovereignty of the Nawab of Bengal, its terms were extremely favourable to the Company. This was not only embarrassing for the Nawab but also empowering for the Company.
* For both sides, the situation was far from settled. While the British saw this as an opportunity to vastly increase their footprint in Bengal, the Nawab, who still outnumbered the British forces, were waiting to regain power and prestige. Tensions remained high and the peace was on tenuous terms.
* Finally, on June 23, 1757, Robert Clive's army met the Nawab's once again, in the famous Battle of Plassey. Though outnumbered, the Company won a

decisive victory, thanks to defections from senior commanders of the Nawab's army, including the infamous Mir Jafar.

* Company's victory in Plassey is the moment when the East India Company became a proper colonial enterprise, interested not just in trade, but territorial control that would serve its economic interests.

3.5 Lavani

Context: The article is based on the controversy surrounding dance form, **" Lavani ",** which has come under criticism for being '**vulgar' and 'obscene'**.

What is the Lavani folk art form?

* The word Lavani comes from 'lavanya' or beauty.
* Lavani is a traditional folk art form in which women dancers wearing nine-yard-long sarees in bright colours, make-up, and ghunghroos perform on dholak beats on a stage before a live audience.
* As an indigenous art form, Lavani has a history going back several centuries, and it attained particular popularity in the Peshwa era in the 18th century.
* Traditionally, performances were held in front of kings or lords, and for the entertainment of tired soldiers resting during breaks in fighting.
* There are several sub-genres of Lavani, of which the most popular is the Shringarik (erotic) kind, in which the lyrics are often teasing, with sensuous dance steps and delicate gestures employed to convey erotic meaning.
* Over the years, Lavani has gained more acceptability among the people, even though certain taboos around it continue. The audience has historically been all-male, but in recent years, some women too have begun to attend performances.

3.6 Mohiniyattam

Context:

Noted dancer Kanak Rele, who gave academic status to Mohiniyattam, passed away recently.

Mohiniattam

* It originated in the state of Kerala. The dance is performed by women in honor of the Hindu god Vishnu in his incarnation as the enchantress Mohini. Mohiniattam is exclusively danced by women. It is also softer than the very vigorous Kathakali.
* The dance projects the essence of feminine grace. It is also noted for the Shringara (erotic) depictions of divine love. Traditionally, the dance was performed solo, but in the 21st century it may also be performed in groups.

A brief history of the dance form

* Some scholars trace Mohiniattam to the second or third century A.D. (to the era of the great Tamil epic, Silappadikaaram), whereas others maintain that it was created in the middle of the eighteenth century in the court of Maharaja Svati Tirunal of Travancore

* It is also believed that the dance form acquired its affinity with the Bharata Natyam technique and Karnatak Music and thereby its repertoire, in Swati Tirunal's court.
* In the beginning of the 20th Century, like all the other traditional arts, Mohiniattam also went into oblivion due to the policies of the British. However, due to the policies of the state and central government, the classical dance form has seen a revival.

Salient features associated with the dance-form

* Mohiniyattam is characterized by graceful, swaying body movements with no abrupt jerks or sudden leaps. It belongs to the Lasya style which is feminine, tender and graceful.
* The most characteristic element of the "form" component of Mohiniattam is the circular or spiral movement of all the limbs of the body. This gives it a swaying effect which resembles the movement of a pendulum and thus it is called aandolika
* The movements are emphasized by the glides and the up and down movement on toes, like the waves of the sea and the swaying of the coconut, palm trees and the paddy fields.
* Movements have been borrowed from Nangiar Koothu and female folk dances Kaikottikali and the Tiruvatirakali.
* The footwork is not terse and is rendered softly. Importance is given to the hand gestures and Mukhabhinaya with subtle facial expressions.
* Mohiniyattam lays emphasis on acting. The dancer identifies herself with the character and sentiments existing in the compositions like the Padams and Pada Varnams which give ample opportunity for facial expressions.
* The hand gestures, 24 in number, are mainly adopted from Hastalakshana Deepika, a text followed by Kathakali. Few are also borrowed from Natya Shastra, Abhinaya Darpana and Balarambharatam.

* The gestures and facial expressions are closer to the natural(gramya) and the realistic (lokadharmi) than to the dramatic or rigidly conventional (natyadharmi).
* Vocal music of this performance art incorporates different rhythms and lyrics of many of the compositions performed in this dance form are in Manipravala that is a mix of Sanskrit and Malayalam language while the music style is Carnatic.
* Instruments played during a Mohiniattam performance usually comprises of Kuzhitalam or cymbals; Veena; Idakka, an hourglass-shaped drum; Mridangam, a barrel-shaped drum with two heads; and flute.
* Imminent 20th-century exponents of Mohiniattam apart from Vallathol Narayana Menon were Kalamandalam Kalyanikutty Amma, Thankamony, Krishna Panicker and Mukundraja. Present day exponents include Sunanda Nair; Smitha Rajan, granddaughter of Kalyanikutty Amma; Radha Dutta; Vijayalakshmi; Gopika Varma and Jayaprabha Menon among others.

3.7 Ustad Bismillah Khan Yuva Puraskar

Context:

Recently the Union Minister for Culture, Tourism and DoNER, presented the Ustad Bismillah Khan Yuva Puraskar (UBKYP) 2019, 2020 and 2021 to 102 artists in New Delhi. The award is presented by Sangeet Natak Akademi to artists in the field of dance, music, and drama. It is presented annually to artists below the age of 40.

About Ustad Bismillah Khan:

• He was a famous Shehnai musician.

• He was one of the few musicians in the country to receive Bharat Ratna.

• It was Ustad ‘Bismillah” Khan who also played at the first Republic Day celebration in 1950.

• Bismillah Khan was the first Indian to be invited to perform at the prestigious Lincoln Centre Hall in the United States of America.

About Sangeet Natak Akademi:

• Sangeet Natak Akademi is India’s national academy of music, dance and drama.

• It was created by a resolution of the Ministry of Education, with Dr P.V.

Rajamannar as its first Chairman.

• It is an Autonomous Body of the Ministry of Culture and is fully funded by the Government for the implementation of its schemes and programmes.

4.GEOGRAPHY

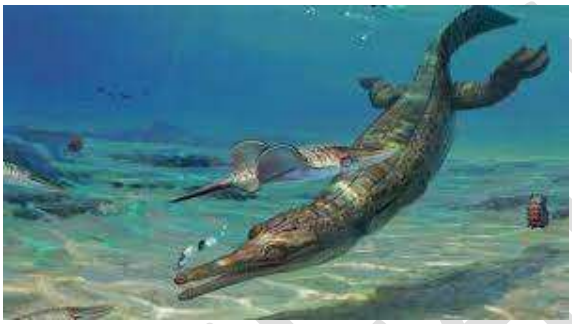
4.1 Thalattosuchian

News:

Scientists have uncovered a new thalattosuchian—an ancient "cousin" of modern-day crocodiles—which could be the oldest of its kind ever discovered.

Concept:

Thalattosuchian



* Thalattosuchia is a clade of marine crocodylomorphs from the Early Jurassic to the Early Cretaceous that had a cosmopolitan distribution.
* They are colloquially referred to as marine crocodiles or sea crocodiles, though they are not members of Crocodilia and records from Thailand and China suggest that some members lived in freshwater.
* The clade contains two major subgroupings, the Teleosauroideaand Metriorhynchoidea. Teleosauroids are not greatly specialised for oceanic life, with back osteoderms similar to other crocodyliformes.
* Within Metriorhynchoidea, the Metriorhynchidaedisplayed extreme adaptions for life in the open ocean, including the transformation of limbs into flippers, the development of a tail fluke, and smooth, scaleless skin.

The new discovery:

* The newly-discovered fossils of Turnersuchus hingleyae represent the only complete Thalattosuchian of its age and date back to the early Jurassic, Pliensbachian period, which was about 185 million years ago.
* The fossils uncovered on the Jurassic Coast in the United Kingdom include part of the head, backbone, and limbs of Turnersuchus hingleyae.

Significance:

* The discovery of this new fossil helps fill a gap in the fossil record and suggests that Thalattosuchians and other crocodile-like animals could have originated around 15 million years farther than Turnersuchus.

4.2 Solomon Islands

Context:

The United States opened an embassy in the Solomon Islands recently in its latest move to counter China's push into the Pacific.

Soloman Islands Located?

* Solomon Islands is a nation in Melanesia, east of Papua New Guinea, comprising more than 990 islands. Its capital is Honiara, located on the island of Guadalcanal.

* The Solomon Islands have been inhabited by Melanesian people for at least 30,000 years.
* It consists of a double chain of volcanic islands and coral atolls in Melanesia.
* Melanesia is a subregion of Oceania in the southwestern Pacific Ocean.
* The country comprises most of the Solomons chain—with the exception of Buka and Bougainville, two islands at the northwestern end that form an autonomous region of Papua New Guinea.
* The island is a constitutional monarchy, with the British monarch, represented by a governor-general, serving as the formal head of state. Still, the country, a member of the Commonwealth, is independent, and the governor-general is appointed on the advice of the unicameral National Parliament.

4.3 Rann of Kutch

Context:

The first G20 Tourism Working Group Meeting recently held in Kutch region of Gujarat.

Concept:

* The Great Rann of Kutch (or Rann of Kutch seasonal salt marsh) is a salt marsh in the Thar Desert in the Kutch District of Gujarat, India.
* It is about 7500 km2 in area and is reputed to be one of the largest salt deserts in the world.
* This area has been inhabited by the Kutchi people.
* The Hindi word is derived from Sanskrit/Vedic word iriṇa attested in the Rigveda and Mahabharata. It is an extension of the Thar Desert.
* Chir Batti

* At night, an unexplained strange dancing light phenomenon known locally as Chir Batti (ghost lights) occurs in the Rann, the adjoining Banni grasslands, and the seasonal wetlands.

4.4 Anatolian Plate

Context:

Recently an earthquake of magnitude 7.8 struck Turkiye, one of the most seismically active regions in the Mediterranean and the world.

Concept:

Anatolian Plate

* The Anatolian Plate is a continental tectonic plate that is separated from the Eurasian plate and the Arabian plate by the North Anatolian Fault and the East Anatolian Fault respectively. Most of the country of Turkey is located on the Anatolian plate.[1] Most significant earthquakes in the region have historically occurred along the northern fault, such as the 1939 Erzincan earthquake. The devastating 2023 Turkey–Syria earthquake occurred along the active East Anatolian fault at a strike slip fault where the Arabian plate is sliding past the Anatolian plate horizontally.

4.5 Lithium

Context:

Geological Survey of India for the first time found traces of Lithium resources in the Salal-Haimana area of the Reasi district of Jammu and Kashmir.

About Lithium:

• Lithium is a non-ferrous metal and is one of the key components in EV batteries.

• It has the symbol Li and is a chemical element.

• It's a silvery-white metal with a delicate texture.

• It is the lightest metal and the lightest solid element under normal circumstances.

• It must be kept in mineral oil since it is very reactive and combustible.

• It is both an alkali and a rare metal.

India's lithium reserves:

• According to the Indian Mines Ministry, the government agencies made the small discovery of lithium resources at a site in Mandya, Karnataka.

• It is the country's first lithium reserve.

Lithium Production in the world:

• Australia, Chile, China and Argentina are the world's top four lithium-producing countries.

• Australia is by far the world's top producer of lithium, with an output of 42,000 tonnes in 2019.

• The Lithium Triangle is a region of the Andes rich in lithium reserves around the borders of Argentina, Bolivia and Chile.

• The lithium in the triangle is concentrated in various salt pans that exist along the Atacama Desert and neighbouring arid areas.

• The area is thought to hold around 54% of the world's lithium reserves.

• The Indian Navy has shown interest in the Lithium Triangle as lithium will be required on Li-ION batteries that are planned to be fitted in future submarines.

4.6 Yellow River

Context:

A recent study has noted that the Chinese practice of building embankments is one of the reasons to blame for the devastating floods occurring in the "Yellow river".

Concept:

"Yellow river".

* The Yellow River or Huang He (Chinese: 黄河, Mandarin: Huáng hé [xwǎŋ xɤ̌] (listen)) is the second-longest river in China,[2] after the Yangtze River, and the sixth-longest river system in the world at the estimated length of 5,464 km (3,395 mi).[3] Originating in the Bayan Har Mountains in Qinghai province of Western China, it flows through nine provinces, and it empties into the Bohai Sea near the city of Dongying in Shandong province. The Yellow River basin has an east–west extent of about 1,900 kilometers (1,180 mi) and a north–south extent of about 1,100 km (680 mi). Its total drainage area is about 795,000 square kilometers (307,000 sq mi).

* The Yellow River's basin was the birthplace of ancient Chinese, and, by extension, Far Eastern civilization,[4] and it was the most prosperous region in early Chinese history. There are frequent devastating floods and course changes produced by the continual elevation of the river bed, sometimes above the level of its surrounding farm fields.

4.7 Geological Survey of India

Context:

The draft Geo-heritage Sites and Geo-relics (Preservation and Maintenance) Bill, 2022, while deemed necessary by several researchers, vests powers entirely in the Geological Survey of India (GSI), a 170-year-old organisation says experts.

About Geological Survey of India:

• The Geological Survey of India (GSI) is a scientific agency.

• It is one of the oldest of such organisations in the world and the second oldest survey in India after Survey of India (founded in 1767).

• GSI, headquartered at Kolkata, has six Regional offices located at Lucknow, Jaipur, Nagpur, Hyderabad, Shillong and Kolkata.

• Presently, Geological Survey of India is an attached office to the Ministry of Mines.

Evolution GSI:

• Until 1852, Geological Survey primarily remained focused on exploration for

coal, mainly for powering steam transport, oil reserves, and ore deposits.

• Then Sir Thomas Oldham broadened the ambit of the scope of functioning of the Geological Survey of India to map the rock types, geological structures and relative ages of different rock types.

In 19th and early 20th century GSI made important contributions to Seismology by its studies and detailed reports on numerous Indian earthquakes.

• In 2017 GSI began pilot project, with the first ever aerial survey of mineral stocks by GSI, to map the mineral stocks up to a depth of 20 km using specially-equipped aircraft.

Role of GSI:

• Conducting geological surveys and studies of India.

• Prime provider of basic earth science information to government, industry and general public

• Official participant in steel, coal, metals, cement, power industries and international geoscientific forums.

About Geo-heritage Sites and Geo-relics:

• The Geological Survey of India (GSI) declares geo-heritage sites/ national geological monuments for protection and maintenance.

• The draft bill defines Geoheritage sites as sites containing:

o geo-relics and phenomena,

o stratigraphic type sections,

o geological structures and geomorphic landforms including caves, natural rock-sculptures of national and international interest; and

o includes such portion of land adjoining the site.

• A Geo-relic is defined as any relic or material of a geological significance or interest like sediments, rocks, minerals, meteorite or fossils.

• The GSI will have the power to acquire geo-relics for its preservation and maintenance.

• The 32 geo-heritage sites spread across 13 states include:

o the Volcanogenic bedded Barytes of Mangampeta in Cuddapah district of Andhra Pradesh,

o the Akal Fossil Wood Park in Jaisalmer, Rajasthan etc.

Key provisions of the proposed bill:

• The Draft Geo-heritage Sites and Geo-relics (Preservation and Maintenance) Bill, 2022 vests powers entirely in the Geological Survey of India (GSI).

• The Bill give it the power to:

o declare sites as having 'geo-heritage' value,

o take possession of relics (fossils, rocks) that rest in private hands,

o prohibit construction 100 metres around such a site, penalise with fines up to ₹5 lakh and possibly imprisonment for vandalism, defacement, and violations of directives of a site by the Director General of GSI.

Declaration of geoheritage sites:

• It would authorise the Central Government to declare a geoheritage site to be of national importance.

• This would be under the provisions of the Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 (RFCTLARR Act).

• Through a public notification in the Official Gazette, the government would spell out what areas were to be acquired by it.

Compensation:

• Provision is made for compensation to the owner or occupier of land who incurs loss or damage from the land due to the exercise of any power under this Act.

• The market value of any property will be ascertained in accordance with the principles set out in the RFCTLARR Act.

Prohibitions:

• The Bill imposes a prohibition on construction, reconstruction, repair or renovation of any building within the geoheritage site area or utilisation of such area in any other manner.

• Exception: construction for preservation and maintenance of geoheritage site or any public work essential to the public.

Penalties:

• There is a penalty of imprisonment which may extend to six months or fine which may extend to Rs.5 lakh, or both.

• In the case of a continuing contravention, additional fine of upto Rs.50,000 for every day of continuing contravention may be imposed.

4.8 Thwaites Glacier/ Doomsday Glacier

Context:

Scientists studying Antarctica's vast Thwaites Glacier say warm water is seeping into its weak spots, worsening melting caused by rising temperatures.

Thwaites Glacier

* Thwaites Glacier is 120 km wide, fast-moving glacier located in Antarctica.
* Because of its size (1.9 lakh square km), it contains enough water to raise the world sea level by more than half a metre.
* Its melting already contributes 4% to global sea-level rise each year. It is estimated that it would collapse into the sea in 200-900 years.
* Studies have found the amount of ice flowing out of it has nearly doubled over the past 30 years.
* It is important for Antarctica as it slows the ice behind it from freely flowing into the ocean. Because of the risk it faces — and poses — Thwaites is often called the Doomsday Glacier.

International Thwaites Collaboration:

* As part of the International Thwaites Glacier collaboration, a team of 13 U.S. and
* British scientists monitored the glacier using an underwater robot vehicle known as Ice fin.
* It was established in 2018.
* Thwaites Glacier is closely monitored for its potential to raise sea levels.

* Along with the Pine Island Glacier, it has been described as part of the "weak underbelly" of the West Antarctic Ice Sheet.

5.ENVIRONMENT

5.1 Inclusive Forum on Carbon Mitigation Approaches

Context:

Organisation for Economic Co-operation and Development (OEDC) launched Inclusive Forum on Carbon Mitigation Approaches.

Concept:

Inclusive Forum on Carbon Mitigation Approaches

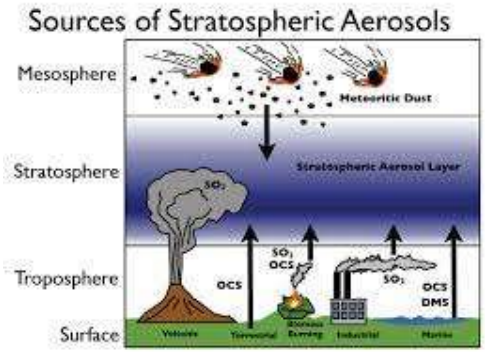
* The Inclusive Forum on Carbon Mitigation Approaches (IFCMA) is an initiative designed to help improve the global impact of emissions reduction efforts around the world through better data and information sharing, evidence-based mutual learning and inclusive multilateral dialogue. It brings together all relevant policy perspectives from a diverse range of countries from around the world, participating on an equal footing basis, to take stock of and consider the effectiveness of different carbon mitigation approaches.
* As of 30 January 2023, 133 countries around the world, representing around 91% of global GDP and covering around 83% of global emissions, have adopted net-zero carbon emissions targets. Consistent with the principles of the multilateral climate policy architecture as set out in the Paris Agreement, countries use or plan to use a widely varied set of emissions reduction policies – both price-based and non-price-based – as tailored to different national circumstances.
* To achieve the shared global objective of net zero emissions, the key challenge is to optimise the combined global impact of all these individual emissions reduction efforts. This is what the IFCMA will help to facilitate through data and information sharing, mutual learning and inclusive multilateral dialogue.

5.2 Aerosols and their effect on Global Climate

Context:

Role of Industrial Aerosols in contributing to Global Cooling. A new study reveals that inactive volcanoes contributed 66 percent of sulphate emissions, known to cool the planet, in the preindustrial era.

About Aerosols:



* Aerosols are defined as a combination of liquid or solid particles suspended in a gaseous or liquid environment.
* In the atmosphere, these particles are mainly situated in the low layers of the atmosphere (< 1.5 km) since aerosol sources are located on the terrestrial surface.
* However, certain aerosols can still be found in the stratosphere, especially volcanic aerosols ejected into the high altitude layers.

• Source of aerosols

1. Natural sources – sea salt generated from breaking waves, mineral dust blown from the surface by wind, and volcanoes.

2. Anthropogenic aerosols – sulphate, nitrate, and carbonaceous aerosols, and are mainly from fossil fuel combustion sources.

Effects of aerosols:

• They affect the atmospheric chemical composition.

• They can reduce visibility.

• They have important impacts on air quality and human health (e.g. aerosols can

cause damage to heart and lungs).

• They serve as nuclei for cloud droplets or ice crystals in ice clouds.

5.3 Extended Producer Responsibility

Context:

India's Extended Producer Responsibility (EPR) framework for used tyres, batteries, and revised rules for e-waste and plastics kindled interest among the G20 countries.

EPR is a critical policy mechanism under which producers are given a significant responsibility financially or physically for the treatment or disposal of post-consumer products.

Objectives of EPR are:

1. Integration of environmental costs
2. Improved waste management
3. Reduction of disposal
4. Reduction of a burden on municipalities
5. Design of environmentally sound products

Benefits of the EPR

EPR causes producers to change packaging design and selection, leading to increased recyclability and/or less packaging use.

It promotes the principle of "polluter pays" by holding the producer accountable for the entire lifecycle of the product.

It provides additional funds for recycling programs, resulting in higher recycling rates.

It improves recycling program efficiency, leading to less cost, which provides a benefit to society.

It results in a fairer system of waste management in which individual consumers pay the cost of their own consumption, rather than general taxpayers.

It decreases the environmental impact from a product and its packaging.

EPR Responsibility Policies under E-Waste Management Rules:

• E-Waste (management and handling) Rules, 2016 adopted Extended Producers Responsibility for the first time in India.

• EPR responsibility under E-Waste (management) Rules, 2016 stipulates collection targets of E–Waste for producers.

• The producers are responsible for setting up collection centres for e-waste and financing and organizing a system for environmentally sound management of ewaste.

• The producers are required to have an arrangement with dismantlers and recyclers through either the Producers responsibility organization or the EWaste exchange system.

• Marketing or selling any electronic equipment without EPR responsibility Authorization is considered a violation of the rules.

EPR responsibility Policy under Plastic Waste Management Rules:

• The Plastic Waste Management (Amendment) Rules, 2022 provide guidelines for strengthening the circular economy of plastic packaging waste as well as promoting alternatives to plastic.

Producers of waste are mandated to ensure that generation of plastic waste is minimized, and plastic waste is not littered and stored at the source, which is then handed over to local bodies or authorized agencies.

5.4 Oder river

Context: A new report by the European Union (EU), has confirmed that the ecological disaster that killed hundreds of tonnes of fish in the Oder river in 2022 was caused by toxic algal bloom .

About the river:

The river is one of Europe's 20 large rivers and is valuable to the livelihoods of and recreation of the 16 million people residing in its catchment area and beyond.

It also serves as a focus for nature preservation with numerous Natura 2000 sites located along its length.

It originates in the Czech Republic, flows through western Poland, forms the border between Poland and Germany, then drains north to the Szczecin Lagoon near Szczecin.

It is Poland's second-longest river in total length and third-longest within its borders after the Vistula and Warta.

5.5 Zebrafish

Context:

Recently, researchers, for the first time, have used the body's own chemistry to develop electrodes in the tissues of zebrafish (a small freshwater fish).

About Zebrafish :

• It is a tropical freshwater fish belonging to the minnow family (Cyprinidae) of the order Cypriniformes.

• Habitat: Native to rivers and streams of South Asia.

• It is a freshwater fish found in tropical and subtropical regions.

• The fish is native to South Asia's Indo-Gangetic plains, where they are mostly found in the paddy fields and even in stagnant water and streams.

• **Features:**

o It is a popular aquarium fish.

o It is about 4 cm long and has dark-blue and silvery longitudinal stripes.

• IUCN Red List Status: Least concerned.

Significance of Zebrafish:

• Zebrafish have the ability to heal their heart after injury through a regenerative process.

• If part of their heart is removed, they can grow it back in a matter of weeks.

• Humans cannot regenerate their hearts upon myocardial damage and a person who suffered a heart attack cannot functionally heal the damaged heart muscle, resulting in reduced pumping efficiency.

• Till now, there is no treatment available to restore the damaged heart function in humans.

∗ Hence scientists have sought to decode the heart regeneration processes using this model animal.

In May 2021, it was announced by researchers at the Queen's University in

Belfast, UK that the hibernation form known as induced torpor found in zebrafish will give radio-protective effects, that may be useful for interplanetary voyages

• Replicating hibernation may therefore protect astronauts against the harsh conditions of space flight

• Zebrafish have also been found to regenerate photoreceptor cells and retinal neurons following injury.

5.6 Heat Waves

Context:

Recent reports by the India Meteorological Department (IMD) describe the impact of heat waves.

Heat Wave

* A Heat Wave is a period of abnormally high temperatures, more than the normal maximum temperature that occurs during the summer season in the North-Western parts of India. Heat Waves typically occur between March and June, and in some rare cases even extend till July. The extreme temperatures and resultant atmospheric conditions adversely affect people living in these regions as they cause physiological stress, sometimes resulting in death.
* The Indian Meteorological Department (IMD) has given the following criteria for Heat Waves :
* Heat Wave need not be considered till maximum temperature of a station reaches atleast 40°C for Plains and atleast 30°C for Hilly regions

* When normal maximum temperature of a station is less than or equal to 40°C Heat Wave Departure from normal is 5°C to 6°C Severe Heat Wave Departure from normal is 7°C or more
* When normal maximum temperature of a station is more than 40°C Heat Wave Departure from normal is 4°C to 5°C Severe Heat Wave Departure from normal is 6°C or more
* When actual maximum temperature remains 45°C or more irrespective of normal maximum temperature, heat waves should be declared. Higher daily peak temperatures and longer, more intense heat waves are becomingly increasingly frequent globally due to climate change. India too is feeling the impact of climate change in terms of increased instances of heat waves which are more intense in nature with each passing year, and have a devastating impact on human health thereby increasing the number of heat wave casualties.
* Higher daily peak temperatures and longer, more intense heat waves are becomingly increasingly frequent globally due to climate change. India too is feeling the impact of climate change in terms of increased instances of heat waves which are more intense in nature with each passing year, and have a devastating impact on human health thereby increasing the number of heat wave casualties.

Health Impacts of Heat Waves

* The health impacts of Heat Waves typically involve dehydration, heat cramps, heat exhaustion and/or heat stroke. The signs and symptoms are as follows:
* Heat Cramps: Ederna (swelling) and Syncope (Fainting) generally accompanied by fever below 39°C i.e.102°F.
* Heat Exhaustion: Fatigue, weakness, dizziness, headache, nausea, vomiting, muscle cramps and sweating.

* Heat Stoke: Body temperatures of 40°C i.e. 104°F or more along with delirium, seizures or coma. This is a potential fatal condition

5.7 Kunming- Montreal Global Biodiversity Framework

Context:

The Kunming-Montreal Global Biodiversity Framework adopted recently, respects the rights of indigenous people regarding biodiversity. Recently, at the 15th Conference of Parties (COP15) to the UN Convention on Biological Diversity "Kunming-Montreal Global Biodiversity Framework" (GBF) was adopted.

Concept:

Kunming- Montreal Global Biodiversity Framework

* GBF includes 4 goals and 23 targets for achievement by 2030.
* The U.N. biodiversity conference concluded in Canada's Montreal.
* The first part of COP 15 took place in Kunming, China and reinforced the commitment to address the biodiversity crisis and the Kunming Declaration was adopted by over 100 countries.

What are the Key Targets of the GBF?

30x30 Deal:

* Restore 30% degraded ecosystems globally (on land and sea) by 2030
* Conserve and manage 30% areas (terrestrial, inland water, and coastal and marine) by 2030
* Stop the extinction of known species, and by 2050 reduce tenfold the extinction risk and rate of all species (including unknown)
* Reduce risk from pesticides by at least 50% by 2030
* Reduce nutrients lost to the environment by at least 50% by 2030

* Reduce pollution risks and negative impacts of pollution from all sources by 2030 to levels that are not harmful to biodiversity and ecosystem functions
* Reduce global footprint of consumption by 2030, including through significantly reducing overconsumption and waste generation and halving food waste
* Sustainably manage areas under agriculture, aquaculture, fisheries, and forestry and substantially increase agroecology and other biodiversity-friendly practices
* Tackle climate change through nature-based solutions
* Reduce the rate of introduction and establishment of invasive alien species by at least 50% by 2030
* Secure the safe, legal and sustainable use and trade of wild species by 2030
* Green up urban spaces.

5.8 Deep Ocean Mission

News:

In the Union Budget 2023-24, Deep Ocean Mission has been allocated Rs 600 crore

Concept:

Deep Ocean Mission

* National Institute of Ocean Technology (NIOT), an autonomous institute under the Ministry of Earth Sciences is developing a manned submersible with a capacity to carry three human beings to 6000 m ocean depth. The Vikram Sarabhai Space Centre (VSSC) of ISRO is involved in developing a titanium alloy human sphere of 2.1 m diameter for the manned submersible.

* The overall estimated cost of the Deep Ocean Mission is Rs. 4077 crores for a period of five years (2021 to 2026).
* The development of the mission has been going on since 2018.
* Aim: To study biodiversity, the impact of climate change, and establish an offshore marine station to explore sources of thermal energy.
* India has been allotted a site of 75,000 square kilometres in the Central Indian Ocean Basin (CIOB) by the International Seabed Authority (ISA) for the exploitation of Polymetallic Nodules (PMN).
* The Ministry of Earth Sciences is carrying out exploration activities for Poly-metallic Nodules (PMN) in the CIOB and for Poly-metallic Sulphides (PMS) in parts of Central and South-West Indian ridges.
* India was the first country to receive the status of a 'Pioneer Investor' in 1987 and was given an area of about 1.5 lakh sq km in the CIOB for nodule exploration.
* In 2002, India signed a contract with the ISA and after complete resource analysis of the seabed 50 per cent was surrendered and the country retained an area of 75,000 sq km.
* Private institutions will be included in the development of technologies for this mission to explore the possibilities of mining, biodiversity, energy, freshwater etc. in the deep ocean and to support the 'blue economy'.

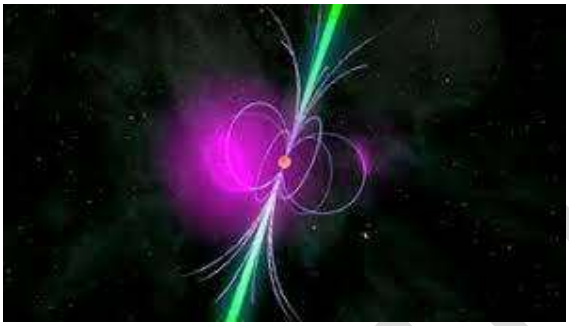
6.SCIENCE & TECHNOLOGY

6.1 Spider Pulsar Systems

Context:

Recently, Scientists have discovered the first gamma-ray eclipses from a special type of binary star system by using NASA's Fermi Gamma-ray Space Telescope.

About Spider Star System:



* It is a binary star system in which a superdense star (pulsar) spins quickly, eats another star.
* The super-dense object that begins to pull a matter from the companion resembles the habits of spiders of the genus Latrodectus, in which the female eats the male after mating, hence the name came.
* Initially, the dense pulsar strips material from the outer atmosphere of its companion, periodically shedding the gathered material in violent explosions.
* In the later stage of their lifetimes, the energetic particles streaming out of the pulsar can strip the atmosphere of its companion.
* In either case, the pulsar slowly erodes its companion over time.
* Two Types:
* Black widows: Binary pulsar systems, in which the mass of a companion star is less than 5 percent of the pulsar.

* Redback: Binary pulsar systems in which mass of the companion star is from 10 to 50 percent of the pulsar.
* What is a Binary star system?
* A binary system is one in which two stars orbit around a common centre of mass, that is they are gravitationally bound to each other.
* What are pulsars?
* Pulsars are rapidly spinning neutron stars, extremely dense starscomposed almost entirely of neutrons and having a diameter of only 20 km (12 miles) or less.
* They emit concentrated streams of radiation far across the cosmos.
* What are neutron stars?
* They are the remnants of giant stars that died in a fiery explosion known as a supernova.
* After such an outburst, the cores of these former stars compact into an ultradense object with the mass of the sun packed into a ball the size of a city.

6.2 Biotin

Context:

Recently dermatologists in Delhi have cautioned users that there is no scientific evidence to prove usage of biotin for healthy hair and nail growth.

Biotin (Vitamin B7)

Why in news? Recently, dermatologists in Delhi have cautioned users that there is no scientific evidence to prove usage of biotin for healthy hair and nail growth.

About:

* It is a water-soluble vitamin that helps the body metabolize fats, carbohydrates, and protein.
* Water-soluble vitamins are not stored in the body, so daily intake is necessary.
* The human cells cannot synthesize vitamin B7.
* However, bacteria in the body can produce biotin, and the vitamin is present in numerous foods.
* Sources of Biotin: Red meat, eggs, seeds, and nuts.
* Deficiency of Biotin can cause: Hair loss, scaly, red rash around the eyes, nose, mouth, and genitals, Depression, Lethargy, Hallucinations, loss of control of bodily movements, known as ataxia, Weakened immune function, Increased risk of bacterial and fungal infections.

6.3 Muons

Context:

Recently researchers are examining the fortress wall of Xi'an, an ancient city in China, by using tiny outer space particles called Muons that can penetrate hundreds of meters of stone surfaces.

What are Muons?

Muons are subatomic particles raining from space. They are created when the particles in Earth's atmosphere collide with cosmic rays — clusters of high-energy particles that move through space at just below the speed of light.

Atom is the smallest unit of matter and is made up of smaller units known as subatomic particles i.e. protons, neutrons and electrons.

6.4 Diyodar meteorite

Context:

Diyodar meteorite that hit India in 2022 was India's first aubrite in 170 years

Concept:

Diyodar Meteorite:

* Scientists from Physical Research Laboratory (PRL), Ahmedabad, are claiming that the meteorite that crashed in two villages in Banaskantha, Gujarat on August 17, 2022, has been identified as an aubrite.
* The PRL group used a gamma-ray spectrometer to determine the mineral composition of aubrite.
* The group also classified the meteorite as a monomict breccia.
* Aubrite meteorite is a coarse-grained igneous rock that formed in oxygen-poor conditions and contains exotic minerals not found on Earth.
* India has seen hundreds of meteorite crashes, but this is only the second recorded crash of an aubrite.
* The meteorite has been named the Diyodar meteorite after the taluka in which the villages are located.
* The last crash of an aubrite before this was in Basti, Uttar Pradesh on December 2, 1852.
* Around 90% of the meteorite was composed of orthopyroxene.
* Pyroxenes are silicates consisting of single chains of silica tetrahedra (SiO 4); orthopyroxenes are pyroxenes with a certain structure.
* Pyroxenes such as diopside and jadeite have been used as gems.
* Spodumene was historically used as lithium ore.
* Rocks with pyroxene have also been used to make crushed stone that is used in construction.

* Aubrites have crashed in at least 12 locations worldwide since 1836, including 3 in Africa and 6 in the U.S.

Meteorite:

* A meteorite is a solid piece of debris from space that survives its passage through the Earth's atmosphere and lands on the Earth's surface.

6.5 Sickle cell disease (SCD)

Context:

Finance Minister recently announced government's plan to launch a mission to eliminate sickle cell anaemia by 2047.

Concept:

Sickle cell disease (SCD):

• It is a group of inherited red blood cell disorders.

• In someone who has SCD, the hemoglobin is abnormal, which causes the red blood cells to become hard and sticky and look like a C-shaped farm tool called a "sickle."

• The sickle cells die early, which causes a constant shortage of red blood cells.
• Also, when they travel through small blood vessels, they get stuck and clog the blood flow.

• This can cause pain and other serious complications (health problems) such as infection, acute chest syndrome and stroke.

• SCD is a genetic condition that is present at birth.

• It is inherited when a child receives two genes—one from each parent—that code for abnormal hemoglobin.

• A blood test can determine whether you have SCD or sickle cell trait.

• SCD can also be diagnosed before a baby is born.

• SCD can only be cured by bone marrow or stem cell transplantation.

6.6 Amorphous Ice

Context:

Recently Scientists have created a new type of ice that matches the density and structure of water, perhaps opening a door to studying **water's mysterious properties**.

The ice is called **medium-density amorphous ice**.

Crystalline vs. Amorphous Ice:

* Almost all of the ice we see in the natural environment of Earth (e.g. in snow, your freezer, in the polar caps) is crystalline ice.
* Amorphous ice consists of water molecules arranged in a disordered state, with no large-scale regularity to their orientations or positions.

6.7 Asbestos

Context:

Recently Brazil sinks age old aircraft carrier carrying asbestos, other toxins.

About Asbestos:

• It is a naturally occurring fibrous silicate mineral.

• Asbestos is a group of six naturally occurring minerals made up of heat-resistant fibers.

• It consists of flexible fibers resistant to heat, electricity and corrosion.

• Asbestos is an excellent electrical insulator and is highly fire-resistant, so for much of the 20th century it was very commonly used across the world as a building material.

• Construction materials contained asbestos because it is an effective insulator.

* Asbestos in cloth, paper, cement, plastic and other materials makes them stronger.

• Asbestos mainly comes from Russia, Kazakhstan and China.

o The toxic mineral was once mined throughout North America.

• Asbestos has been used on ships as both a fire retardant and an insulator to protect sailors from the constant and jarring vibrations of ships' engines.

Health Effects

• It is known to be a highly toxic material and a carcinogen.

• Inhaled or swallowed asbestos fibers can become trapped in the respiratory or digestive systems of the body, accumulating over time.

• Repeated exposure can cause inflammation and damage the DNA.

• The following illnesses have been associated with asbestos exposure: lung cancer, COPD, mesothelioma and asbestosis.

6.8 Skye UTM

Context:

Recently, Union Minister for Road Transport and Highways unveiled Skye UTM, confirmed as the most cutting-edge unmanned traffic management system in the world.

About Skye UTM:

What is it?

It is a Cloud-based aerial traffic management system that integrates unmanned air traffic with manned aviation airspace.

Purpose: It has been built towards providing situational awareness, autonomous navigation, risk assessment, and traffic management to all drone/other aerial mobility operators across the airspace.

Operation:

* It captures more than 255+ parameters of Unmanned Aerial Vehicle (UAV) movements and stores them into its 'Blackbox,' a published systematic description of the entire flight.
* The platform offers the first 3-Dimensional view of the drone airspace along with operations and regulations mapping servers which provide the latest airspace status, verified paths and display real-time UAV movements.
* It connects and communicates with all types of drones, from survey drones to delivery drones to aerial taxis.

* It can handle more than 4000 flights per hour.
* The platform offers regulatory access to Air Traffic Controllers and other regulatory authorities, allowing them to have real-time drone traffic movement information, pilot information, and other necessary data for evaluation and coordination.

6.9 H5N1 virus/Bird Flue

Context:

Monitoring the evolution of the shapeshifting H5N1 virus can add to the preparedness against another potential pandemic.

About H5N1 virus/Bird Flue:

What is Bird Flu?

* Bird flu or avian influenza is a disease caused by avian influenza Type A virusesfound naturally in wild birds worldwide.
* The virus infects domestic poultry including chickens, ducks, turkeys and there have been reports of H5N1 infection among pigs, cats, and even tigers in Thailand zoos.
* Avian Influenza type A viruses are classified based on two proteins on their surfaces – Hemagglutinin(HA) and Neuraminidase(NA).
* There are about 18 HA subtypes and 11 NA subtypes. Several combinations of these two proteins are possible e.g., H5N1, H7N2, H9N6, H17N10, etc.

Bird flu: Infection in Humans:

* There have been reports of avian and swine influenza infections in humans including A(H1N1), A(H1N2), A(H5N1), A(H7N9), etc.
* The first report of human H5N1 infection was in 1997 and currently, over 700 human cases of Asian Highly Pathogenic Asian Avian Influenza A

(HPAI) H5N1 virus have been reported to the World Health Organisation from 16 countries.

* The infection is deadly as it has a high mortality rate of about 60%.
* The most common route of virus transmission is direct contact— when a person comes in close contact with infected birds, either dead or alive.
* Humans can also be affected if they come in contact with contaminated surfaces or air near the infected poultry.
* There is no sufficient evidence suggesting the spread of the virus through properly cooked meat.

Symptoms of Avian Influenza:

* Fever, cough, sore throat, muscle aches, nausea, abdominal pain, diarrhea, vomiting
* Severe respiratory illness
* Neurologic changes (altered mental status, seizures)

Risk groups:

* Children and adults below 40 were seen to be the most affected and mortality was high in 10-19 years olds.

6.10 Dark galaxy

Context:

Recently, Italian researchers have discovered a Dark Galaxy or Invisible Galaxy using Atacama Large Millimeter Array (ALMA).

Dark galaxy-

* A dark galaxy is a hypothesized galaxy with no, or very few, stars.
* They received their name because they have no visible stars, but may be detectable if they contain significant amounts of gas.
* The team revealed that it is compact, and containing large quantities of interstellar dust, it is a young galaxy, forming stars at about 1000 times the rate of the Milky Way.
* Astronomers have long theorized the existence of dark galaxies, but there are no confirmed examples to date.
* Dark galaxies are distinct from intergalactic gas clouds caused by galactic tidal interactions, since these gas clouds do not contain dark matter, so they do not technically qualify as galaxies.
* Distinguishing between intergalactic gas clouds and galaxies is difficult; most candidate dark galaxies turn out to be tidal gas clouds.

What is Atacama Large Millimetre/Submillimeter Array(ALMA)?

* ALMA is an astronomical interferometer of 66 radio telescopes in the Atacama Desert of northern Chile, which observe electromagnetic radiation at millimeter and submillimeter wavelengths.
* The array has been constructed on the 5,000 m (16,000 ft) elevation Chajnantor plateau – near the Llano de Chajnantor Observatory and the Atacama Pathfinder Experiment.

* This location was chosen for its high elevation and low humidity, factors which are crucial to reduce noise and decrease signal attenuation due to Earth's atmosphere.
* ALMA provides insight on star birth during the early Stelliferous era and detailed imaging of local star and planet formation.
* ALMA is an international partnership amongst Europe, the United States, Canada, Japan, South Korea, Taiwan, and Chile.
* Costing about US$1.4 billion, it is the most expensive ground-based telescope in operation.
* ALMA began scientific observations in the second half of 2011 and the first images were released to the press on 3 October 2011.
* The array has been fully operational since March 2013.

6.11 TAPAS BH-201

Context:

The Prime Minister has shared aerial coverage of Ground and Air display captured from indigenously developed Medium Altitude Long Endurance during rehearsal from a height of 12000 feet.

TAPAS UAV

* Tactical Airborne Platform for Aerial Surveillance-Beyond Horizon-201 or TAPAS BH-201 (Sanskrit: तपस्, tápas, "Heat") (formerly referred to as Rustom-II is a medium-altitude long-endurance (MALE)[2] unmanned aerial vehicle (UAV) being developed in India by Aeronautical Development Establishment (ADE) on the lines of General Atomics MQ-1 Predator.
* The first flight of the UAV took place in November 2016.